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<120> SARS VIRUS NUCLEOTIDE AND AMINO ACID SEQUENCES AND USES THEREOF

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<160> 206

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Asn Val Thr Gly Phe His Thr Ile Asn His Thr Phe Gly Asn Pro Val
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Ile Pro Phe Lys Asp Gly Ile Tyr Phe Ala Ala Thr Glu Lys Ser Asn
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Thr Lys Met Ser Glu Cys Val Leu Gly Gln Ser Lys Arg Val Asp
1010 1015 1020

Phe Cys Gly Lys Gly Tyr His Leu Met Ser Phe Pro Gln Ala Ala
1025 1030 1035

Pro His Gly Val Val Phe Leu His Val Thr Tyr Val Pro Ser Gln
1040 1045 1050

Glu Arg Asn Phe Thr Thr Ala Pro Ala Ile Cys His Glu Gly Lys
1055 1060 1065

Ala Tyr Phe Pro Arg Glu Gly Val Phe Val Phe Asn Gly Thr Ser
1070 1075 1080

Trp Phe Ile Thr Gln Arg Asn Phe Phe Ser Pro Gln Ile Ile Thr
1085 1090 1095

Thr Asp Asn Thr Phe Val Ser Gly Asn Cys Asp Val Val Ile Gly
1100 1105 1110

Ile Ile Asn Asn Thr Val Tyr Asp Pro Leu Gln Pro Glu Leu Asp
1115 1120 1125

Ser Phe Lys Glu Glu Leu Asp Lys Tyr Phe Lys Asn His Thr Ser
1130 1135 1140

Pro Asp Val Asp Leu Gly Asp Ile Ser Gly Ile Asn Ala Ser Val
1145 1150 1155

Val Asn Ile Gln Lys Glu Ile Asp Arg Leu Asn Glu Val Ala Lys
1160 1165 1170

Asn Leu Asn Glu Ser Leu Ile Asp Leu Gln Glu Leu Gly Lys Tyr
1175 1180 1185

Glu Gln Tyr Ile Lys Trp Pro Trp Tyr Val Trp Leu Gly Phe Ile
1190 1195 1200

Ala Gly Leu Ile Ala Ile Val Met Val Thr Ile Leu Leu Cys Cys
1205 1210 1215

Met Thr Ser Cys Cys Ser Cys Leu Lys Gly Ala Cys Ser Cys Gly
1220 1225 1230

Ser Cys Cys Lys Phe Asp Glu Asp Asp Ser Glu Pro Val Leu Lys
1235 1240 1245

Gly Val Lys Leu His Tyr Thr
1250 1255

<210> 34
<211> 220
<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 34

Met Ala Asp Asn Gly Thr Ile Thr Val Glu Glu Leu Lys Gln Leu Leu
1 5 10 15

Glu Gln Trp Asn Leu Val Ile Gly Phe Leu Phe Leu Ala Trp Ile Met
20 25 30

Leu Leu Gln Phe Ala Tyr Ser Asn Arg Asn Arg Phe Leu Tyr Ile Ile
35 40 45

Lys Leu Val Phe Leu Trp Leu Leu Trp Pro Val Thr Leu Ala Cys Phe
50 55 60

Val Leu Ala Ala Val Tyr Arg Ile Asn Trp Val Thr Gly Gly Ile Ala
65 70 75 80

Ile Ala Met Ala Cys Ile Val Gly Leu Met Trp Leu Ser Tyr Phe Val
85 90 95

Ala Ser Phe Arg Leu Phe Ala Arg Thr Arg Ser Met Trp Ser Phe Asn
100 105 110

Pro Glu Thr Asn Ile Leu Leu Asn Val Pro Leu Arg Gly Thr Ile Val
115 120 125

Thr Arg Pro Leu Met Glu Ser Glu Leu Val Ile Gly Ala Val Ile Ile
130 135 140

Arg Gly His Leu Arg Met Ala Gly His Ser Leu Gly Arg Cys Asp Ile
145 150 155 160

Lys Asp Leu Pro Lys Glu Ile Thr Val Ala Thr Ser Arg Thr Leu Ser
165 170 175

Tyr Tyr Lys Leu Gly Ala Ser Gln Arg Val Gly Thr Asp Ser Gly Phe
180 185 190

Ala Ala Tyr Asn Arg Tyr Arg Ile Gly Asn Tyr Lys Leu Asn Thr Asp
195 200 205

His Ala Gly Ser Asn Asp Asn Ile Ala Leu Leu Val
210 215 220

<210> 35
<211> 76
<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 35

Met Tyr Ser Phe Val Ser Glu Glu Thr Gly Thr Leu Ile Val Asn Ser
1 5 10 15

Val Leu Leu Phe Leu Ala Phe Val Val Phe Leu Leu Val Thr Leu Ala
20 25 30

Ile Leu Thr Ala Leu Arg Leu Cys Ala Tyr Cys Cys Asn Ile Val Asn
35 40 45

Val Ser Leu Val Lys Pro Thr Val Tyr Val Tyr Ser Arg Val Lys Asn
50 55 60

Leu Asn Ser Ser Glu Gly Val Pro Asp Leu Leu Val
65 70 75

<210> 36
<211> 422
<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 36

Met Ser Asp Asn Gly Pro Gln Ser Asn Gln Arg Ser Ala Pro Arg Ile
1 5 10 15

Thr Phe Gly Gly Pro Thr Asp Ser Thr Asp Asn Asn Gln Asn Gly Gly
20 25 30

Arg Asn Gly Ala Arg Pro Lys Gln Arg Arg Pro Gln Gly Leu Pro Asn
35 40 45

Asn Thr Ala Ser Trp Phe Thr Ala Leu Thr Gln His Gly Lys Glu Glu
50 55 60

Leu Arg Phe Pro Arg Gly Gln Gly Val Pro Ile Asn Thr Asn Ser Gly
65 70 75 80

Pro Asp Asp Gln Ile Gly Tyr Tyr Arg Arg Ala Thr Arg Arg Val Arg
85 90 95

Gly Gly Asp Gly Lys Met Lys Glu Leu Ser Pro Arg Trp Tyr Phe Tyr
100 105 110

Tyr Leu Gly Thr Gly Pro Glu Ala Ser Leu Pro Tyr Gly Ala Asn Lys
115 120 125

Glu Gly Ile Val Trp Val Ala Thr Glu Gly Ala Leu Asn Thr Pro Lys
130 135 140

Asp His Ile Gly Thr Arg Asn Pro Asn Asn Asn Ala Ala Thr Val Leu
145 150 155 160

Gln Leu Pro Gln Gly Thr Thr Leu Pro Lys Gly Phe Tyr Ala Glu Gly
165 170 175

Ser Arg Gly Gly Ser Gln Ala Ser Ser Arg Ser Ser Ser Arg Ser Arg
180 185 190

Gly Asn Ser Arg Asn Ser Thr Pro Gly Ser Ser Arg Gly Asn Ser Pro
195 200 205

Ala Arg Met Ala Ser Gly Gly Gly Glu Thr Ala Leu Ala Leu Leu Leu
210 215 220

Leu Asp Arg Leu Asn Gln Leu Glu Ser Lys Val Ser Gly Lys Gly Gln
225 230 235 240

Gln Gln Gln Gly Gln Thr Val Thr Lys Lys Ser Ala Ala Glu Ala Ser
245 250 255

Lys Lys Pro Arg Gln Lys Arg Thr Ala Thr Lys Gln Tyr Asn Val Thr
260 265 270

Gln Ala Phe Gly Arg Arg Gly Pro Glu Gln Thr Gln Gly Asn Phe Gly
275 280 285

Asp Gln Asp Leu Ile Arg Gln Gly Thr Asp Tyr Lys His Trp Pro Gln
290 295 300

Ile Ala Gln Phe Ala Pro Ser Ala Ser Ala Phe Phe Gly Met Ser Arg
305 310 315 320

Ile Gly Met Glu Val Thr Pro Ser Gly Thr Trp Leu Thr Tyr His Gly
325 330 335

Ala Ile Lys Leu Asp Asp Lys Asp Pro Gln Phe Lys Asp Asn Val Ile
340 345 350

Leu Leu Asn Lys His Ile Asp Ala Tyr Lys Thr Phe Pro Pro Thr Glu
355 360 365

Pro Lys Lys Asp Lys Lys Lys Lys Thr Asp Glu Ala Gln Pro Leu Pro
370 375 380

Gln Arg Gln Lys Lys Gln Pro Thr Val Thr Leu Leu Pro Ala Ala Asp
385 390 395 400

Met Asp Asp Phe Ser Arg Gln Leu Gln Asn Ser Met Ser Gly Ala Ser
405 410 415

Ala Asp Ser Thr Gln Ala
420

<210> 37
<211> 230
<212> PRT

<213> Bovine coronavirus

<400> 37

Met Ser Ser Val Thr Thr Pro Ala Pro Val Tyr Thr Trp Thr Ala Asp
1 5 10 15

Glu Ala Ile Lys Phe Leu Lys Glu Trp Asn Phe Ser Leu Gly Ile Ile
20 25 30

Leu Leu Phe Ile Thr Val Ile Leu Gln Phe Gly Tyr Thr Ser Arg Ser
35 40 45

Met Phe Val Tyr Val Ile Lys Met Val Ile Leu Trp Leu Met Trp Pro
50 55 60

Leu Thr Ile Ile Leu Thr Ile Phe Asn Cys Val Tyr Ala Leu Asn Asn
65 70 75 80

Val Tyr Leu Gly Phe Ser Ile Val Phe Thr Ile Val Ala Ile Ile Met
85 90 95

Trp Ile Val Tyr Phe Val Asn Ser Ile Arg Leu Phe Ile Arg Thr Gly
100 105 110

Ser Trp Trp Ser Phe Asn Pro Glu Thr Asn Asn Leu Met Cys Ile Asp
115 120 125

Met Lys Gly Arg Met Tyr Val Arg Pro Ile Ile Glu Asp Tyr His Thr
130 135 140

Leu Thr Val Thr Ile Ile Arg Gly His Leu Tyr Met Gln Gly Ile Lys
145 150 155 160

Leu Gly Thr Gly Tyr Ser Leu Ser Asp Leu Pro Ala Tyr Val Thr Val
165 170 175

Ala Lys Val Ser His Leu Leu Thr Tyr Lys Arg Gly Phe Leu Asp Lys
180 185 190

Ile Gly Asp Thr Ser Gly Phe Ala Val Tyr Val Lys Ser Lys Val Gly
195 200 205

Asn Tyr Arg Leu Pro Ser Thr Gln Lys Gly Ser Gly Leu Asp Thr Ala
210 215 220

Leu Leu Arg Asn Asn Ile

225 230

<210> 38
<211> 226
<212> PRT
<213> Avian infectious bronchitis virus

<400> 38

Met Ser Asn Gly Thr Glu Asn Cys Thr Leu Ser Thr Gln Gln Ala Ala
1 5 10 15

Glu Leu Phe Lys Glu Tyr Asn Leu Phe Ile Thr Ala Phe Leu Leu Phe
20 25 30

Leu Thr Ile Leu Leu Gln Tyr Gly Tyr Ala Thr Arg Ser Arg Phe Ile
35 40 45

Tyr Ile Leu Lys Met Ile Val Leu Trp Cys Phe Trp Pro Leu Asn Ile
50 55 60

Ala Val Gly Ile Ile Ser Cys Ile Tyr Pro Pro Asn Thr Gly Gly Leu
65 70 75 80

Val Ala Ala Ile Ile Leu Thr Val Phe Ala Cys Leu Ser Phe Val Gly
85 90 95

Tyr Trp Ile Gln Ser Phe Arg Leu Phe Lys Arg Cys Arg Ser Trp Trp
100 105 110

Ser Phe Asn Pro Glu Ser Asn Ala Val Gly Ser Ile Leu Leu Thr Asn
115 120 125

Gly Gln Gln Cys Asn Phe Ala Ile Glu Ser Val Pro Met Val Leu Ser
130 135 140

Pro Ile Ile Lys Asn Gly Ala Leu Tyr Cys Glu Gly Gln Trp Leu Ala
145 150 155 160

Lys Cys Glu Pro Asp His Leu Pro Lys Asp Ile Phe Val Cys Thr Pro
165 170 175

Asp Arg Arg Asn Ile Tyr Arg Met Val Gln Lys Tyr Thr Gly Asp Gln
180 185 190

Ser Gly Asn Lys Lys Arg Phe Ala Thr Phe Val Tyr Ala Lys Gln Ser
195 200 205

Val Asp Thr Gly Glu Leu Gly Ser Val Ala Thr Gly Gly Ser Ser Leu
210 215 220

Tyr Thr
225

<210> 39
<211> 262
<212> PRT
<213> Transmissible gastroenteritis virus

<400> 39

Met Lys Ile Leu Leu Ile Leu Ala Cys Val Ile Ala Cys Ala Cys Gly
1 5 10 15

Glu Arg Tyr Cys Ala Met Lys Ser Asp Thr Asp Leu Ser Cys Arg Asn
20 25 30

Ser Thr Ala Ser Asp Cys Glu Ser Cys Phe Asn Gly Gly Asp Leu Ile
35 40 45

Trp His Leu Ala Asn Trp Asn Phe Ser Trp Ser Ile Ile Leu Ile Val
50 55 60

Phe Ile Thr Val Leu Gln Tyr Gly Arg Pro Gln Phe Ser Trp Phe Val
65 70 75 80

Tyr Gly Ile Lys Met Leu Ile Met Trp Leu Leu Trp Pro Val Val Leu
85 90 95

Ala Leu Thr Ile Phe Asn Ala Tyr Ser Glu Tyr Gln Val Ser Arg Tyr
100 105 110

Val Met Phe Gly Phe Ser Ile Ala Gly Ala Ile Val Thr Phe Val Leu
115 120 125

Trp Ile Met Tyr Phe Val Arg Ser Ile Gln Leu Tyr Arg Arg Thr Lys
130 135 140

Ser Trp Trp Ser Phe Asn Pro Glu Thr Lys Ala Ile Leu Cys Val Ser
145 150 155 160

Ala Leu Gly Arg Ser Tyr Val Leu Pro Leu Glu Gly Val Pro Thr Gly
165 170 175

Val Thr Leu Thr Leu Leu Ser Gly Asn Leu Tyr Ala Glu Gly Phe Lys

180 185 190

Ile Ala Gly Gly Met Asn Ile Asp Asn Leu Pro Lys Tyr Val Met Val
195 200 205

Ala Leu Pro Ser Arg Thr Ile Val Tyr Thr Leu Val Gly Lys Lys Leu
210 215 220

Lys Ala Ser Ser Ala Thr Gly Trp Ala Tyr Tyr Val Lys Ser Lys Ala
225 230 235 240

Gly Asp Tyr Ser Thr Glu Ala Arg Thr Asp Asn Leu Ser Glu Gln Glu
245 250 255

Lys Leu Leu His Met Val
260

<210> 40
<211> 263
<212> PRT
<213> feline coronavirus

<400> 40

Met Lys Ile Leu Leu Ile Leu Ala Cys Ala Val Ala Cys Val Tyr Gly
1 5 10 15

Glu Gln Ile Arg Tyr Cys Ala Met Gln Glu Thr Gly Leu Ser Cys Arg
20 25 30

Asn Gly Thr Ala Ser Asp Cys Glu Ser Cys Phe Asn Gly Gly Asp Leu
35 40 45

Ile Trp His Leu Ala Asn Trp Asn Phe Ser Trp Ser Ile Ile Leu Ile
50 55 60

Val Phe Ile Thr Val Leu Gln Tyr Gly Arg Pro Gln Phe Ser Trp Phe
65 70 75 80

Val Tyr Gly Ile Lys Met Leu Ile Met Trp Leu Leu Trp Pro Ile Val
85 90 95

Leu Ala Leu Thr Ile Phe Asn Ala Tyr Ser Glu Tyr Glu Val Ser Arg
100 105 110

Tyr Val Met Phe Gly Phe Ser Val Ala Gly Ala Val Val Thr Phe Ala
115 120 125

Leu Trp Met Met Tyr Phe Val Arg Ser Ile Gln Leu Tyr Arg Arg Thr
130 135 140

Lys Ser Trp Trp Ser Phe Asn Pro Glu Thr Asn Ala Ile Leu Cys Val
145 150 155 160

Asn Ala Leu Gly Arg Ser Tyr Val Leu Pro Leu Asp Gly Thr Pro Thr
165 170 175

Gly Val Thr Leu Thr Leu Leu Ser Gly Asn Leu Tyr Ala Glu Gly Phe
180 185 190

Lys Met Ala Gly Gly Leu Thr Ile Glu His Leu Pro Lys Tyr Val Met
195 200 205

Ile Arg Thr Pro Asn Arg Thr Ile Val Tyr Thr Leu Val Gly Lys Gln
210 215 220

Leu Lys Ala Thr Thr Ala Thr Gly Trp Ala Tyr Tyr Val Lys Ser Lys
225 230 235 240

Ala Gly Asp Tyr Ser Thr Glu Ala Arg Thr Asp Asn Leu Ser Glu His
245 250 255

Glu Lys Leu Leu His Met Val
260

<210> 41
<211> 231
<212> PRT
<213> Human coronavirus OC43

MSSKTTPAPVYIWTADEAIKFLKEWNFSLGIILLFITIILQFGYTSRSMFVYVIKMIILWLMWPLTIILTIFNCVY
ALNNVYLGLSIVFTIVAIIMWIVYFVNSIRLFIRTGSFWSFNPETNNLMCIDMKGTMYVRPIIEDYHTLTVTIIRG
HLYIQGIKLGTGYSWADLPAYMTVAKVTHLCTYKRGFLDRISDTSGFAVYVKSKVGNYRLPSTQKGSGMDTALLRN
NI

<SEQ ID NO:37;prt;Porcine hemagglutinating encephalomyelitis virus

<400> 41

Met Ser Ser Pro Thr Thr Pro Val Pro Val Ile Ser Trp Thr Ala Asp
1 5 10 15

Glu Ala Ile Lys Phe Leu Lys Glu Trp Asn Phe Ser Leu Gly Ile Ile
20 25 30

Val Leu Phe Ile Thr Ile Ile Leu Gln Phe Gly Tyr Thr Ser Arg Ser
35 40 45

Met Phe Val Tyr Val Ile Lys Met Val Ile Leu Trp Leu Met Trp Pro
50 55 60

Leu Thr Ile Ile Leu Thr Ile Phe Asn Cys Val Tyr Ala Leu Asn Asn
65 70 75 80

Val Tyr Leu Gly Phe Ser Ile Val Phe Thr Ile Val Ala Ile Ile Met
85 90 95

Trp Val Val Tyr Phe Val Asn Ser Ile Arg Leu Phe Ile Arg Thr Gly
100 105 110

Ser Trp Trp Ser Phe Asn Pro Glu Thr Asn Asn Leu Met Cys Ile Asp
115 120 125

Met Lys Gly Arg Met Tyr Val Arg Pro Ile Ile Glu Asp Tyr His Thr
130 135 140

Leu Thr Ala Thr Ile Ile Arg Gly His Leu Tyr Ile Gln Gly Ile Lys
145 150 155 160

Leu Gly Thr Gly Tyr Ser Leu Ser Asp Leu Pro Ala Tyr Val Thr Val
165 170 175

Ala Lys Val Thr His Leu Cys Thr Tyr Lys Arg Gly Phe Leu Asp Arg
180 185 190

Ile Gly Asp Thr Ser Gly Phe Ala Val Tyr Val Lys Ser Lys Val Gly
195 200 205

Asn Tyr Arg Leu Pro Ser Thr His Lys Gly Ser Gly Met Asp Thr Ala
210 215 220

Leu Leu Arg Asn Asn Ile Met
225 230

<210> 42
<211> 223
<212> PRT
<213> Avian infectious bronchitis virus

<400> 42

Met Met Glu Asn Cys Thr Leu Asn Leu Glu Gln Ala Thr Leu Leu Phe
1 5 10 15

Lys Glu Tyr Asn Leu Phe Ile Thr Ala Phe Leu Leu Phe Leu Thr Ile

20 25 30

Leu Leu Gln Tyr Gly Tyr Ala Thr Arg Ser Arg Phe Ile Tyr Ile Leu
35 40 45

Lys Met Ile Val Leu Trp Cys Phe Trp Pro Leu Asn Ile Ala Val Gly
50 55 60

Val Ile Ser Cys Ile Tyr Pro Pro Asn Thr Gly Gly Leu Val Ala Ala
65 70 75 80

Ile Ile Leu Thr Val Phe Ala Cys Leu Ser Phe Val Gly Tyr Trp Ile
85 90 95

Gln Ser Cys Arg Leu Phe Lys Arg Cys Arg Ser Trp Trp Ser Phe Asn
100 105 110

Pro Glu Ser Asn Ala Val Gly Ser Ile Leu Leu Thr Asn Gly Gln Gln
115 120 125

Cys Asn Phe Ala Ile Glu Ser Val Pro Met Val Leu Ala Pro Ile Ile
130 135 140

Lys Asn Gly Val Leu Tyr Cys Glu Gly Gln Trp Leu Ala Lys Cys Glu
145 150 155 160

Pro Asp His Leu Pro Lys Asp Ile Phe Val Cys Thr Pro Asp Arg Arg
165 170 175

Asn Ile Tyr Arg Met Val Gln Lys Tyr Thr Gly Asp Gln Ser Gly Asn
180 185 190

Lys Lys Arg Val Ala Thr Phe Val Tyr Ala Lys Gln Ser Val Asp Thr
195 200 205

Gly Glu Leu Glu Ser Val Pro Thr Gly Gly Ser Ser Leu Tyr Thr
210 215 220

<210> 43
<211> 455
<212> PRT
<213> Mouse Hepatitis Virus

<400> 43

Met Ser Phe Val Pro Gly Gln Glu Asn Ala Gly Ser Arg Ser Ser Ser
1 5 10 15

Val Asn Arg Ala Gly Asn Gly Ile Leu Lys Lys Thr Thr Trp Ala Asp
20 25 30

Gln Thr Glu Arg Gly Pro Asn Asn Gln Asn Arg Gly Arg Arg Asn Gln
35 40 45

Pro Lys Gln Thr Ala Thr Thr Gln Pro Asn Ser Gly Ser Val Val Pro
50 55 60

His Tyr Ser Trp Phe Ser Gly Ile Thr Gln Phe Gln Lys Gly Lys Glu
65 70 75 80

Phe Gln Phe Ala Gln Gly Gln Gly Val Pro Ile Ala Asn Gly Ile Pro
85 90 95

Ala Ser Glu Gln Lys Gly Tyr Trp Tyr Arg His Asn Arg Arg Ser Phe
100 105 110

Lys Thr Pro Asp Gly Gln Gln Lys Gln Leu Leu Pro Arg Trp Tyr Phe
115 120 125

Tyr Tyr Leu Gly Thr Gly Pro His Ala Gly Ala Glu Tyr Gly Asp Asp
130 135 140

Ile Asp Gly Val Val Trp Val Ala Ser Gln Gln Ala Asp Thr Lys Thr
145 150 155 160

Thr Ala Asp Ile Val Glu Arg Asp Pro Ser Ser His Glu Ala Ile Pro
165 170 175

Thr Arg Phe Ala Pro Gly Thr Val Leu Pro Gln Gly Phe Tyr Val Glu
180 185 190

Gly Ser Gly Arg Ser Ala Pro Ala Ser Arg Ser Gly Ser Arg Ser Gln
195 200 205

Ser Arg Gly Pro Asn Asn Arg Ala Arg Ser Ser Ser Asn Gln Arg Gln
210 215 220

Pro Ala Ser Thr Val Lys Pro Asp Met Ala Glu Glu Ile Ala Ala Leu
225 230 235 240

Val Leu Ala Lys Leu Gly Lys Asp Ala Gly Gln Pro Lys Gln Val Thr
245 250 255

Lys Gln Ser Ala Lys Glu Val Arg Gln Lys Ile Leu Asn Lys Pro Arg
260 265 270

Gln Lys Arg Thr Pro Asn Lys Gln Cys Pro Val Gln Gln Cys Phe Gly
275 280 285

Lys Arg Gly Pro Asn Gln Asn Phe Gly Gly Ser Glu Met Leu Lys Leu
290 295 300

Gly Thr Ser Asp Pro Gln Phe Pro Ile Leu Ala Glu Leu Ala Pro Thr
305 310 315 320

Pro Ser Ala Phe Phe Phe Gly Ser Lys Leu Glu Leu Val Lys Lys Asn
325 330 335

Ser Gly Gly Ala Asp Asp Pro Thr Lys Asp Val Tyr Glu Leu Gln Tyr
340 345 350

Ser Gly Ala Ile Arg Phe Asp Ser Thr Leu Pro Gly Phe Glu Thr Ile
355 360 365

Met Lys Val Leu Asn Glu Asn Leu Asp Ala Tyr Gln Asp Gln Ala Gly
370 375 380

Gly Ala Asp Val Val Ser Pro Lys Pro Gln Arg Lys Arg Gly Thr Lys
385 390 395 400

Gln Lys Ala Leu Lys Gly Glu Val Asp Asn Val Ser Val Ala Lys Pro
405 410 415

Lys Ser Ser Val Gln Arg Asn Val Ser Arg Glu Leu Thr Pro Glu Asp
420 425 430

Arg Ser Leu Leu Ala Gln Ile Leu Asp Asp Gly Val Val Pro Asp Gly
435 440 445

Leu Glu Asp Asp Ser Asn Val
450 455

<210> 44
<211> 448
<212> PRT
<213> Bovine coronavirus

<400> 44

Met Ser Phe Thr Pro Gly Lys Gln Ser Ser Ser Arg Ala Ser Ser Gly
1 5 10 15

Asn Arg Ser Gly Asn Gly Ile Leu Lys Trp Ala Asp Gln Ser Asp Gln
20 25 30

Ser Arg Asn Val Gln Thr Arg Gly Arg Arg Ala Gln Pro Lys Gln Thr
35 40 45

Ala Thr Ser Gln Gln Pro Ser Gly Gly Asn Val Val Pro Tyr Tyr Ser
50 55 60

Trp Phe Ser Gly Ile Thr Gln Phe Gln Lys Gly Lys Glu Phe Glu Phe
65 70 75 80

Ala Glu Gly Gln Gly Val Pro Ile Ala Pro Gly Val Pro Ala Thr Glu
85 90 95

Ala Lys Gly Tyr Trp Tyr Arg His Asn Arg Arg Ser Phe Lys Thr Ala
100 105 110

Asp Gly Asn Gln Arg Gln Leu Leu Pro Arg Trp Tyr Phe Tyr Tyr Leu
115 120 125

Gly Thr Gly Pro His Ala Lys Asp Gln Tyr Gly Thr Asp Ile Asp Gly
130 135 140

Val Tyr Trp Val Ala Ser Asn Gln Ala Asp Val Asn Thr Pro Ala Asp
145 150 155 160

Ile Leu Asp Arg Asp Pro Ser Ser Asp Glu Ala Ile Pro Thr Arg Phe
165 170 175

Pro Pro Gly Thr Val Leu Pro Gln Gly Tyr Tyr Ile Glu Gly Ser Gly
180 185 190

Arg Ser Ala Pro Asn Ser Arg Ser Thr Ser Arg Ala Ser Ser Arg Ala
195 200 205

Ser Ser Ala Gly Ser Arg Ser Arg Ala Asn Ser Gly Asn Arg Thr Pro
210 215 220

Thr Ser Gly Val Thr Pro Asp Met Ala Asp Gln Ile Ala Ser Leu Val
225 230 235 240

Leu Ala Lys Leu Gly Lys Asp Ala Ala Lys Pro Gln Gln Val Thr Lys
245 250 255

Gln Thr Ala Lys Glu Ile Arg Gln Lys Ile Leu Asn Lys Pro Arg Gln
260 265 270

Lys Arg Ser Pro Asn Lys Gln Cys Thr Val Gln Gln Cys Phe Gly Lys
275 280 285

Arg Gly Pro Asn Gln Asn Phe Gly Gly Gly Glu Met Leu Lys Leu Gly
290 295 300

Thr Ser Asp Pro Gln Phe Pro Ile Leu Ala Glu Leu Ala Pro Thr Ala
305 310 315 320

Gly Ala Phe Phe Phe Gly Ser Arg Leu Glu Leu Ala Lys Val Gln Asn
325 330 335

Leu Ser Gly Asn Leu Asp Glu Pro Gln Lys Asp Val Tyr Glu Leu Arg
340 345 350

Tyr Asn Gly Ala Ile Arg Phe Asp Ser Thr Leu Ser Gly Phe Glu Thr
355 360 365

Ile Met Lys Val Leu Asn Glu Asn Leu Asn Ala Tyr Gln Gln Gln Asp
370 375 380

Gly Thr Met Asn Met Ser Pro Lys Pro Gln Arg Gln Arg Gly Gln Lys
385 390 395 400

Asn Gly Gln Gly Glu Asn Asp Asn Ile Ser Val Ala Ala Pro Lys Ser
405 410 415

Arg Val Gln Gln Asn Lys Ile Arg Glu Leu Thr Ala Glu Asp Ile Ser
420 425 430

Leu Leu Lys Lys Met Asp Glu Pro Phe Thr Glu Asp Thr Ser Glu Ile
435 440 445

<210> 45
<211> 409
<212> PRT
<213> Avian infectious bronchitis virus

<400> 45

Met Ala Ser Gly Lys Ala Ala Gly Lys Thr Asp Ala Pro Ala Pro Val
1 5 10 15

Ile Lys Leu Gly Gly Pro Lys Pro Pro Lys Val Gly Ser Ser Gly Asn

20 25 30

Ala Ser Trp Phe Gln Ala Leu Lys Ala Lys Lys Leu Asn Ala Pro Ala
35 40 45

Pro Lys Phe Glu Gly Ser Gly Val Pro Asp Asn Glu Asn Leu Lys Ile
50 55 60

Ser Gln Gln His Gly Tyr Trp Arg Arg Gln Ala Arg Tyr Lys Pro Gly
65 70 75 80

Lys Gly Gly Arg Lys Pro Val Pro Asp Ala Trp Tyr Phe Tyr Tyr Thr
85 90 95

Gly Thr Gly Pro Ala Ala Asp Leu Asn Trp Gly Asp Ser Gln Asp Gly
100 105 110

Ile Val Trp Val Ala Ala Lys Gly Ala Asp Val Lys Ser Arg Ser Asn
115 120 125

Gln Gly Thr Arg Asp Pro Asp Lys Phe Asp Gln Tyr Pro Leu Arg Phe
130 135 140

Ser Asp Gly Gly Pro Asp Gly Asn Phe Arg Trp Asp Phe Ile Pro Leu
145 150 155 160

Asn Arg Gly Arg Ser Gly Arg Ser Thr Ala Ala Ser Ser Ala Ala Ser
165 170 175

Ser Arg Ala Pro Ser Arg Glu Gly Ser Arg Gly Arg Leu Asn Gly Ala
180 185 190

Glu Asp Asp Leu Ile Ala Arg Ala Ala Lys Ile Ile Gln Asp Gln Gln
195 200 205

Lys Lys Gly Ser Arg Ile Thr Lys Ala Lys Ala Glu Glu Met Ile His
210 215 220

Arg Arg Tyr Cys Lys Arg Thr Val Pro Pro Gly Val Ser Ile Asp Lys
225 230 235 240

Val Phe Gly Pro Arg Thr Lys Gly Lys Glu Gly Asn Phe Gly Asp Asp
245 250 255

Lys Met Asn Glu Glu Gly Ile Lys Asp Gly Arg Val Thr Ala Met Leu
260 265 270

Asn Leu Val Pro Ser Ser His Ala Cys Leu Phe Gly Ser Gln Val Thr
275 280 285

Pro Lys Leu Gln Pro Asp Gly Leu His Leu Thr Phe Arg Phe Thr Thr
290 295 300

Val Val Ser Arg Asp Asp Pro Gln Phe Asp Asn Tyr Val Lys Ile Cys
305 310 315 320

Asp Glu Cys Val Asp Gly Val Gly Thr Arg Pro Lys Asp Glu Val Val
325 330 335

Arg Pro Lys Ser Arg Ser Ser Ser Arg Pro Ala Thr Arg Gly Thr Ser
340 345 350

Pro Ala Pro Lys Gln Gln Arg Pro Lys Lys Glu Lys Lys Pro Lys Lys
355 360 365

Gln Asp Asp Glu Val Asp Lys Ala Leu Thr Ser Asp Glu Glu Arg Asn
370 375 380

Asn Ala Gln Leu Glu Phe Asp Asp Glu Pro Lys Val Ile Asn Trp Gly
385 390 395 400

Asp Ser Ala Leu Gly Glu Asn Glu Leu
405

<210> 46
<211> 376
<212> PRT
<213> Feline coronavirus

<400> 46

Met Ala Thr Gln Gly Gln Arg Val Asn Trp Gly Asp Glu Pro Ser Lys
1 5 10 15

Arg Arg Gly Arg Ser Asn Ser Arg Gly Arg Lys Asn Asn Asp Ile Pro
20 25 30

Leu Ser Tyr Phe Asn Pro Ile Thr Leu Asp Gln Gly Ser Lys Phe Trp
35 40 45

Asn Leu Cys Pro Arg Asp Phe Val Pro Lys Gly Ile Gly Asn Lys Asp
50 55 60

Gln Gln Ile Gly Tyr Trp Asn Arg Gln Ala Arg Tyr Arg Ile Val Lys
65 70 75 80

Gly Gln Arg Val Glu Leu Pro Glu Arg Trp Phe Phe Tyr Phe Leu Gly
85 90 95

Thr Gly Pro His Ala Asp Ala Lys Phe Lys Ala Lys Ile Asp Gly Val
100 105 110

Phe Trp Val Ala Arg Asp Gly Ala Met Asn Lys Pro Thr Ser Leu Gly
115 120 125

Thr Arg Gly Thr Asn Asn Glu Ser Lys Pro Leu Lys Phe Asp Gly Lys
130 135 140

Ile Pro Pro Gln Phe Gln Leu Glu Val Asn Arg Ser Arg Asn Asn Ser
145 150 155 160

Arg Ser Gly Ser Gln Ser Arg Ser Val Ser Arg Asn Arg Ser Gln Ser
165 170 175

Arg Gly Arg Gln Gln Ser Asn Asn Gln Asn Thr Asn Val Glu Asp Thr
180 185 190

Ile Val Ala Val Leu Gln Lys Leu Gly Val Thr Asp Lys Gln Arg Ser
195 200 205

Arg Ser Lys Ser Gly Glu Arg Ser Gln Ser Lys Ser Arg Asp Thr Thr
210 215 220

Pro Lys Asn Ala Asn Lys His Thr Trp Lys Lys Thr Ala Gly Lys Gly
225 230 235 240

Asp Val Thr Asn Phe Tyr Gly Ala Arg Ser Ser Ser Ala Asn Phe Gly
245 250 255

Asp Ser Asp Leu Val Ala Asn Gly Asn Ala Ala Lys Cys Tyr Pro Gln
260 265 270

Ile Ala Glu Cys Val Pro Ser Val Ser Ser Ile Leu Phe Gly Ser Gln
275 280 285

Trp Ser Ala Glu Glu Ala Gly Asp Gln Val Lys Val Thr Leu Thr His
290 295 300

Asn Tyr Tyr Leu Pro Lys Asp Asp Ala Lys Thr Ser Gln Phe Leu Glu

305 310 315 320

Gln Ile Asp Ala Tyr Lys Arg Pro Ser Glu Val Ala Lys Asp Gln Arg
325 330 335

Gln Arg Lys Ser Arg Ser Lys Ser Ala Asp Lys Lys Pro Glu Glu Leu
340 345 350

Ser Val Thr Leu Glu Ala Tyr Thr Asp Val Phe Asp Asp Thr Gln Val
355 360 365

Glu Met Ile Asp Glu Val Thr Asn
370 375

<210> 47
<211> 382
<212> PRT
<213> porcine transmissible gastroenteritis virus

<400> 47

Met Ala Asn Gln Gly Gln Arg Val Ser Trp Gly Asp Glu Ser Thr Lys
1 5 10 15

Thr Arg Gly Arg Ser Asn Ser Arg Gly Arg Lys Asn Asn Asn Ile Pro
20 25 30

Leu Ser Phe Phe Asn Pro Ile Thr Leu Gln Gln Gly Ser Lys Phe Trp
35 40 45

Asn Leu Cys Pro Arg Asp Phe Val Pro Lys Gly Ile Gly Asn Arg Asp
50 55 60

Gln Gln Ile Gly Tyr Trp Asn Arg Gln Thr Arg Tyr Arg Met Val Lys
65 70 75 80

Gly Gln Arg Lys Glu Leu Pro Glu Arg Trp Phe Phe Tyr Tyr Leu Gly
85 90 95

Thr Gly Pro His Ala Asp Ala Lys Phe Lys Asp Lys Leu Asp Gly Val
100 105 110

Val Trp Val Ala Lys Asp Gly Ala Met Asn Lys Pro Thr Thr Leu Gly
115 120 125

Ser Arg Gly Ala Asn Asn Glu Ser Lys Ala Leu Lys Phe Asp Gly Lys
130 135 140

Val Pro Gly Glu Phe Gln Leu Glu Val Asn Gln Ser Arg Asp Asn Ser
145 150 155 160

Arg Leu Arg Ser Gln Ser Arg Ser Arg Ser Arg Asn Arg Ser Gln Ser
165 170 175

Arg Gly Arg Gln Gln Ser Asn Asn Lys Lys Asp Asp Ser Val Glu Gln
180 185 190

Ala Val Leu Ala Ala Leu Lys Lys Leu Gly Val Tyr Thr Glu Lys Gln
195 200 205

Gln Gln Arg Ser Arg Ser Lys Ser Lys Glu Arg Ser Asn Ser Lys Ile
210 215 220

Arg Asp Thr Thr Pro Lys Asn Glu Asn Lys His Thr Trp Lys Arg Thr
225 230 235 240

Ala Gly Lys Gly Asp Val Thr Arg Phe Tyr Gly Thr Arg Ser Asn Ser
245 250 255

Ala Asn Phe Gly Asp Ser Asp Leu Val Ala Asn Gly Ser Ser Ala Lys
260 265 270

His Tyr Pro Gln Leu Ala Glu Cys Val Pro Ser Val Ser Ser Ile Leu
275 280 285

Phe Gly Ser Tyr Trp Thr Ser Lys Glu Asp Gly Asp Gln Ile Glu Val
290 295 300

Thr Phe Thr His Lys Tyr His Leu Pro Lys Asp Asp Pro Lys Thr Gly
305 310 315 320

Gln Phe Leu Gln Gln Ile Asn Ala Tyr Ala Arg Pro Ser Glu Val Ala
325 330 335

Lys Glu Gln Arg Lys Arg Lys Ser Arg Ser Lys Ser Ala Glu Arg Ser
340 345 350

Glu Gln Glu Val Val Pro Asp Ala Leu Ile Glu Asn Tyr Thr Asp Val
355 360 365

Phe Asp Asp Thr Gln Val Glu Met Ile Asp Glu Val Thr Asn
370 375 380

<210> 48
<211> 389
<212> PRT
<213> Human coronavirus 229E

<400> 48

Met Ala Thr Val Lys Trp Ala Asp Ala Ser Glu Pro Gln Arg Gly Arg
1 5 10 15

Gln Gly Arg Ile Pro Tyr Ser Leu Tyr Ser Pro Leu Leu Val Asp Ser
20 25 30

Glu Gln Pro Trp Lys Val Ile Pro Arg Asn Leu Val Pro Ile Asn Lys
35 40 45

Lys Asp Lys Asn Lys Leu Ile Gly Tyr Trp Asn Val Gln Lys Arg Phe
50 55 60

Arg Thr Arg Lys Gly Lys Arg Val Asp Leu Ser Pro Lys Leu His Phe
65 70 75 80

Tyr Tyr Leu Gly Thr Gly Pro His Lys Asp Ala Lys Phe Arg Glu Arg
85 90 95

Val Glu Gly Val Val Trp Val Ala Val Asp Gly Ala Lys Thr Glu Pro
100 105 110

Thr Gly Tyr Gly Val Arg Arg Lys Asn Ser Glu Pro Glu Ile Pro His
115 120 125

Phe Asn Gln Lys Leu Pro Asn Gly Val Thr Val Val Glu Glu Pro Asp
130 135 140

Ser Arg Ala Pro Ser Arg Ser Gln Ser Arg Ser Gln Ser Arg Gly Arg
145 150 155 160

Gly Glu Ser Lys Pro Gln Ser Arg Asn Pro Ser Ser Asp Arg Asn His
165 170 175

Asn Ser Gln Asp Asp Ile Met Lys Ala Val Ala Ala Ala Leu Lys Ser
180 185 190

Leu Gly Phe Asp Lys Pro Gln Glu Lys Asp Lys Lys Ser Ala Lys Thr
195 200 205

Gly Thr Pro Lys Pro Ser Arg Asn Gln Ser Pro Ala Ser Ser Gln Thr
210 215 220

Ser Ala Lys Ser Leu Ala Arg Ser Gln Ser Ser Glu Thr Lys Glu Gln
225 230 235 240

Lys His Glu Met Gln Lys Pro Arg Trp Lys Arg Gln Pro Asn Asp Asp
245 250 255

Val Thr Ser Asn Val Thr Gln Cys Phe Gly Pro Arg Asp Leu Asp His
260 265 270

Asn Phe Gly Ser Ala Gly Val Val Ala Asn Gly Val Lys Ala Lys Gly
275 280 285

Tyr Pro Gln Phe Ala Glu Leu Val Pro Ser Thr Ala Ala Met Leu Phe
290 295 300

Asp Ser His Ile Val Ser Lys Glu Ser Gly Asn Thr Val Val Leu Thr
305 310 315 320

Phe Thr Thr Arg Val Thr Val Pro Lys Asp His Pro His Leu Gly Lys
325 330 335

Phe Leu Glu Glu Leu Asn Ala Phe Thr Arg Glu Met Gln Gln His Pro
340 345 350

Leu Leu Asn Pro Ser Ala Leu Glu Phe Asn Pro Ser Gln Thr Ser Pro
355 360 365

Ala Thr Ala Glu Pro Val Arg Asp Glu Val Ser Ile Glu Thr Asp Ile
370 375 380

Ile Asp Glu Val Asn
385

<210> 49
<211> 448
<212> PRT
<213> Human coronavirus

<400> 49

Met Ser Phe Thr Pro Gly Lys Gln Ser Ser Ser Arg Ala Ser Ser Gly
1 5 10 15

Asn Arg Ser Gly Asn Gly Ile Leu Lys Trp Ala Asp Gln Ser Asp Gln
20 25 30

Val Arg Asn Val Gln Thr Arg Gly Arg Arg Ala Gln Pro Lys Gln Thr
35 40 45

Ala Thr Ser Gln Gln Pro Ser Gly Gly Asn Val Val Pro Tyr Tyr Ser
50 55 60

Trp Phe Ser Gly Ile Thr Gln Phe Gln Lys Gly Lys Glu Phe Glu Phe
65 70 75 80

Val Glu Gly Gln Gly Pro Pro Ile Ala Pro Gly Val Pro Ala Thr Glu
85 90 95

Ala Lys Gly Tyr Trp Tyr Arg His Asn Arg Gly Ser Phe Lys Thr Ala
100 105 110

Asp Gly Asn Gln Arg Gln Leu Leu Pro Arg Trp Tyr Phe Tyr Tyr Leu
115 120 125

Gly Thr Gly Pro His Ala Lys Asp Gln Tyr Gly Thr Asp Ile Asp Gly
130 135 140

Val Tyr Trp Val Ala Ser Asn Gln Ala Asp Val Asn Thr Pro Ala Asp
145 150 155 160

Ile Val Asp Arg Asp Pro Ser Ser Asp Glu Ala Ile Pro Thr Arg Phe
165 170 175

Pro Pro Gly Thr Val Leu Pro Gln Gly Tyr Tyr Ile Glu Gly Ser Gly
180 185 190

Arg Ser Ala Pro Asn Ser Arg Ser Thr Ser Arg Thr Ser Ser Arg Ala
195 200 205

Ser Ser Ala Gly Ser Arg Ser Arg Ala Asn Ser Gly Asn Arg Thr Pro
210 215 220

Thr Ser Gly Val Thr Pro Asp Met Ala Asp Gln Ile Ala Ser Leu Val
225 230 235 240

Leu Ala Lys Leu Gly Lys Asp Ala Thr Lys Pro Gln Gln Val Thr Lys
245 250 255

His Thr Ala Lys Glu Val Arg Gln Lys Ile Leu Asn Lys Pro Arg Gln
260 265 270

Lys Arg Ser Pro Asn Lys Gln Cys Thr Val Gln Gln Cys Phe Gly Lys

275 280 285

Arg Gly Pro Asn Gln Asn Phe Gly Gly Gly Glu Met Leu Lys Leu Gly
290 295 300

Thr Ser Asp Pro Gln Phe Pro Ile Leu Ala Glu Leu Ala Pro Thr Ala
305 310 315 320

Gly Ala Phe Phe Phe Gly Ser Arg Leu Glu Leu Ala Lys Val Gln Asn
325 330 335

Leu Ser Gly Asn Pro Asp Glu Pro Gln Lys Asp Val Tyr Glu Leu Arg
340 345 350

Tyr Asn Gly Ala Ile Arg Phe Asp Ser Thr Leu Ser Gly Phe Glu Thr
355 360 365

Ile Met Lys Val Leu Asn Glu Asn Leu Asn Ala Tyr Gln Gln Gln Asp
370 375 380

Gly Met Met Asn Met Ser Pro Lys Pro Gln Arg Gln Arg Gly His Lys
385 390 395 400

Asn Gly Gln Gly Glu Asn Asp Asn Ile Ser Val Ala Val Pro Lys Ser
405 410 415

Arg Val Gln Gln Asn Lys Ser Arg Glu Leu Thr Ala Glu Asp Ile Ser
420 425 430

Leu Leu Lys Lys Met Asp Glu Pro Tyr Thr Glu Asp Thr Ser Glu Ile
435 440 445

<210> 50
<211> 449
<212> PRT
<213> porcine hemagglutinating encephalomyelitis

<400> 50

Met Ser Phe Thr Pro Gly Lys Gln Ser Ser Ser Arg Ala Ser Ser Gly
1 5 10 15

Asn Arg Ser Gly Asn Gly Ile Leu Lys Trp Ala Asp Gln Ser Asp Gln
20 25 30

Ser Arg Asn Val Gln Thr Arg Gly Arg Arg Val Gln Ser Lys Gln Thr
35 40 45

Ala Thr Ser Gln Gln Pro Ser Gly Gly Thr Val Val Pro Tyr Tyr Ser
50 55 60

Trp Phe Ser Gly Ile Thr Gln Phe Gln Lys Gly Lys Glu Phe Glu Phe
65 70 75 80

Ala Glu Gly Gln Gly Val Pro Ile Ala Pro Gly Val Pro Ser Thr Glu
85 90 95

Ala Lys Gly Tyr Trp Tyr Arg His Asn Arg Arg Ser Phe Lys Thr Ala
100 105 110

Asp Gly Asn Gln Arg Gln Leu Leu Pro Arg Trp Tyr Phe Tyr Tyr Leu
115 120 125

Gly Thr Gly Pro His Ala Lys Asp Gln Tyr Gly Thr Asp Ile Asp Gly
130 135 140

Val Phe Trp Val Ala Ser Asn Gln Ala Asp Ile Asn Thr Pro Ala Asp
145 150 155 160

Ile Val Asp Arg Asp Pro Ser Ser Asp Glu Ala Ile Pro Thr Arg Phe
165 170 175

Pro Pro Gly Thr Val Leu Pro Gln Gly Tyr Tyr Ile Glu Gly Ser Gly
180 185 190

Arg Ser Ala Pro Asn Ser Arg Ser Thr Ser Arg Ala Pro Asn Arg Ala
195 200 205

Pro Ser Ala Gly Ser Arg Ser Arg Ala Asn Ser Gly Asn Arg Thr Ser
210 215 220

Thr Pro Gly Val Thr Pro Asp Met Ala Asp Gln Ile Ala Ser Leu Val
225 230 235 240

Leu Ala Lys Leu Gly Lys Asp Ala Thr Lys Pro Gln Gln Val Thr Lys
245 250 255

Gln Thr Ala Lys Glu Val Arg Gln Lys Ile Leu Asn Lys Pro Arg Gln
260 265 270

Lys Arg Ser Pro Asn Lys Gln Cys Thr Val Gln Gln Cys Phe Gly Lys
275 280 285

Arg Gly Pro Asn Gln Asn Phe Gly Gly Gly Glu Met Leu Lys Leu Gly
290 295 300

Thr Ser Asp Pro Gln Phe Pro Ile Leu Ala Glu Leu Ala Pro Thr Ala
305 310 315 320

Gly Ala Phe Phe Phe Gly Ser Arg Leu Glu Leu Ala Lys Val Gln Asn
325 330 335

Leu Ser Gly Asn Pro Asp Glu Pro Gln Lys Asp Val Tyr Glu Leu Arg
340 345 350

Tyr Asn Gly Ala Ile Arg Phe Asp Ser Thr Leu Ser Gly Phe Glu Thr
355 360 365

Ile Met Lys Val Leu Asn Gln Asn Leu Asn Ala Tyr Gln His Gln Glu
370 375 380

Asp Gly Met Met Asn Ile Ser Pro Lys Pro Gln Arg Gln Arg Gly Gln
385 390 395 400

Lys Asn Gly Gln Val Glu Asn Asp Asn Val Ser Val Ala Ala Pro Lys
405 410 415

Ser Arg Val Gln Gln Asn Lys Ser Arg Glu Leu Thr Ala Glu Asp Ile
420 425 430

Ser Leu Leu Lys Lys Met Asp Glu Pro Tyr Thr Glu Asp Thr Ser Glu
435 440 445

Ile

<210> 51
<211> 409
<212> PRT
<213> turkey coronavirus

<400> 51

Met Ala Ser Gly Lys Ala Thr Gly Lys Thr Asp Ala Pro Ala Pro Ile
1 5 10 15

Ile Lys Leu Gly Gly Pro Lys Pro Pro Lys Val Gly Ser Ser Gly Asn
20 25 30

Ala Ser Trp Phe Gln Ser Ile Lys Ala Lys Lys Leu Asn Ser Pro Gln
35 40 45

Pro Lys Phe Glu Gly Ser Gly Val Pro Asp Asn Glu Asn Ile Lys Thr
50 55 60

Ser Gln Gln His Gly Tyr Trp Arg Arg Gln Ala Arg Phe Lys Pro Gly
65 70 75 80

Lys Gly Gly Arg Lys Pro Val Pro Asp Ala Trp Tyr Phe Tyr Tyr Thr
85 90 95

Gly Thr Gly Pro Ala Ala Asp Leu Asn Trp Gly Asp Thr Gln Asp Gly
100 105 110

Ile Val Trp Val Ala Ala Lys Gly Ala Asp Val Lys Ser Arg Ser Asn
115 120 125

Gln Gly Thr Arg Asp Pro Asp Lys Phe Asp Gln Tyr Pro Leu Arg Phe
130 135 140

Ser Asp Gly Gly Pro Asp Ser Asn Phe Arg Trp Asp Phe Ile Pro Leu
145 150 155 160

His Arg Gly Arg Ser Gly Arg Ser Thr Ala Ala Ser Ser Ala Ala Ser
165 170 175

Ser Arg Ala Pro Ser Arg Asp Gly Ser Arg Gly Arg Arg Ser Gly Ser
180 185 190

Glu Asp Asp Leu Ile Ala Arg Ala Ala Lys Ile Ile Gln Asp Gln Gln
195 200 205

Lys Lys Gly Ser Arg Ile Thr Lys Ala Lys Ala Asp Glu Met Ala His
210 215 220

Arg Arg Tyr Cys Lys Arg Thr Val Pro Pro Gly Tyr Lys Val Asp Gln
225 230 235 240

Val Phe Gly Pro Arg Thr Lys Gly Lys Glu Gly Asn Phe Gly Asp Asp
245 250 255

Lys Met Asn Glu Glu Gly Ile Lys Asp Gly Arg Val Thr Ala Met Leu
260 265 270

Asn Leu Val Pro Ser Ser His Ala Cys Leu Phe Gly Ser Arg Val Thr
275 280 285

Pro Lys Leu Gln Pro Asp Gly Leu His Leu Arg Phe Glu Phe Thr Thr
290 295 300

Val Val Pro Arg Asp Asp Pro Gln Phe Asp Asn Tyr Val Thr Ile Cys
305 310 315 320

Asp Gln Cys Val Asp Gly Ile Gly Thr Arg Pro Lys Asp Asn Glu Pro
325 330 335

Arg Pro Lys Ser Arg Pro Ser Ser Arg Pro Ala Thr Arg Gly Asn Ser
340 345 350

Pro Ala Pro Arg Gln Gln Arg Pro Lys Lys Glu Lys Lys Pro Lys Lys
355 360 365

Gln Asp Asp Glu Val Asp Lys Ala Leu Thr Ser Asp Glu Glu Arg Asn
370 375 380

Asn Ala Gln Leu Glu Phe Asp Asp Glu Pro Lys Val Ile Asn Trp Gly
385 390 395 400

Asp Ser Ala Leu Gly Glu Asn His Leu
405

<210> 52
<211> 1173
<212> PRT
<213> Human coronavirus 229E

<400> 52

Met Phe Val Leu Leu Val Ala Tyr Ala Leu Leu His Ile Ala Gly Cys
1 5 10 15

Gln Thr Thr Asn Gly Leu Asn Thr Ser Tyr Ser Val Cys Asn Gly Cys
20 25 30

Val Gly Tyr Ser Glu Asn Val Phe Ala Val Glu Ser Gly Gly Tyr Ile
35 40 45

Pro Ser Asp Phe Ala Phe Asn Asn Trp Phe Leu Leu Thr Asn Thr Ser
50 55 60

Ser Val Val Asp Gly Val Val Arg Ser Phe Gln Pro Leu Leu Leu Asn
65 70 75 80

Cys Leu Trp Ser Val Ser Gly Leu Arg Phe Thr Thr Gly Phe Val Tyr

85 90 95

Phe Asn Gly Thr Gly Arg Gly Asp Cys Lys Gly Phe Ser Ser Asp Val
100 105 110

Leu Ser Asp Val Ile Arg Tyr Asn Leu Asn Phe Glu Glu Asn Leu Arg
115 120 125

Arg Gly Thr Ile Leu Phe Lys Thr Ser Tyr Gly Val Val Val Phe Tyr
130 135 140

Cys Thr Asn Asn Thr Leu Val Ser Gly Asp Ala His Ile Pro Phe Gly
145 150 155 160

Thr Val Leu Gly Asn Phe Tyr Cys Phe Val Asn Thr Thr Ile Gly Thr
165 170 175

Glu Thr Thr Ser Ala Phe Val Gly Ala Leu Pro Lys Thr Val Arg Glu
180 185 190

Phe Val Ile Ser Arg Thr Gly His Phe Tyr Ile Asn Gly Tyr Arg Tyr
195 200 205

Phe Thr Leu Gly Asn Val Glu Ala Val Asn Phe Asn Val Thr Thr Ala
210 215 220

Glu Thr Thr Asp Phe Phe Thr Val Ala Leu Ala Ser Tyr Ala Asp Val
225 230 235 240

Leu Val Asn Val Ser Gln Thr Ser Ile Ala Asn Ile Ile Tyr Cys Asn
245 250 255

Ser Val Ile Asn Arg Leu Arg Cys Asp Gln Leu Ser Phe Tyr Val Pro
260 265 270

Asp Gly Phe Tyr Ser Thr Ser Pro Ile Gln Ser Val Glu Leu Pro Val
275 280 285

Ser Ile Val Ser Leu Pro Val Tyr His Lys His Met Phe Ile Val Leu
290 295 300

Tyr Val Asp Phe Lys Pro Gln Ser Gly Gly Gly Lys Cys Phe Asn Cys
305 310 315 320

Tyr Pro Ala Gly Val Asn Ile Thr Leu Ala Asn Phe Asn Glu Thr Lys
325 330 335

Gly Pro Leu Cys Val Asp Thr Ser His Phe Thr Thr Lys Tyr Val Ala
340 345 350

Val Tyr Ala Asn Val Gly Arg Trp Ser Ala Ser Ile Asn Thr Gly Asn
355 360 365

Cys Pro Phe Ser Phe Gly Lys Val Asn Asn Phe Val Lys Phe Gly Ser
370 375 380

Val Cys Phe Ser Leu Lys Asp Ile Pro Gly Gly Cys Ala Met Pro Ile
385 390 395 400

Val Ala Asn Trp Ala Tyr Ser Lys Tyr Tyr Thr Ile Gly Thr Leu Tyr
405 410 415

Val Ser Trp Ser Asp Gly Asp Gly Ile Thr Gly Val Pro Gln Pro Val
420 425 430

Glu Gly Val Ser Ser Phe Met Asn Val Thr Leu Asp Lys Cys Thr Lys
435 440 445

Tyr Asn Ile Tyr Asp Val Ser Gly Val Gly Val Ile Arg Val Ser Asn
450 455 460

Asp Thr Phe Leu Asn Gly Ile Thr Tyr Thr Ser Thr Ser Gly Asn Leu
465 470 475 480

Leu Gly Phe Lys Asp Val Thr Lys Gly Thr Ile Tyr Ser Ile Thr Pro
485 490 495

Cys Asn Pro Pro Asp Gln Leu Val Val Tyr Gln Gln Ala Val Val Gly
500 505 510

Ala Met Leu Ser Glu Asn Phe Thr Ser Tyr Gly Phe Ser Asn Val Val
515 520 525

Glu Leu Pro Lys Phe Phe Tyr Ala Ser Asn Gly Thr Tyr Asn Cys Thr
530 535 540

Asp Ala Val Leu Thr Tyr Ser Ser Phe Gly Val Cys Ala Asp Gly Ser
545 550 555 560

Ile Ile Ala Val Gln Pro Arg Asn Val Ser Tyr Asp Ser Val Ser Ala
565 570 575

Ile Val Thr Ala Asn Leu Ser Ile Pro Ser Asn Trp Thr Ile Ser Val
580 585 590

Gln Val Glu Tyr Leu Gln Ile Thr Ser Thr Pro Ile Val Val Asp Cys
595 600 605

Ser Thr Tyr Val Cys Asn Gly Asn Val Arg Cys Val Glu Leu Leu Lys
610 615 620

Gln Tyr Thr Ser Ala Cys Lys Thr Ile Glu Asp Ala Leu Arg Asn Ser
625 630 635 640

Ala Arg Leu Glu Ser Ala Asp Val Ser Glu Met Leu Thr Phe Asp Lys
645 650 655

Lys Ala Phe Thr Leu Ala Asn Val Ser Ser Phe Gly Asp Tyr Asn Leu
660 665 670

Ser Ser Val Ile Pro Ser Leu Pro Thr Ser Gly Ser Arg Val Ala Gly
675 680 685

Arg Ser Ala Ile Glu Asp Ile Leu Phe Ser Lys Ile Val Thr Ser Gly
690 695 700

Leu Gly Thr Val Asp Ala Asp Tyr Lys Asn Cys Thr Lys Gly Leu Ser
705 710 715 720

Ile Ala Asp Leu Ala Cys Ala Gln Tyr Tyr Asn Gly Ile Met Val Leu
725 730 735

Pro Gly Val Ala Asp Ala Glu Arg Met Ala Met Tyr Thr Gly Ser Leu
740 745 750

Ile Gly Gly Ile Ala Leu Gly Gly Leu Thr Ser Ala Val Ser Ile Pro
755 760 765

Phe Ser Leu Ala Ile Gln Ala Arg Leu Asn Tyr Val Ala Leu Gln Thr
770 775 780

Asp Val Leu Gln Glu Asn Gln Lys Ile Leu Ala Ala Ser Phe Asn Lys
785 790 795 800

Ala Met Thr Asn Ile Val Asp Ala Phe Thr Gly Val Asn Asp Ala Ile
805 810 815

Thr Gln Thr Ser Gln Ala Leu Gln Thr Val Ala Thr Ala Leu Asn Lys
820 825 830

Ile Gln Asp Val Val Asn Gln Gln Gly Asn Ser Leu Asn His Leu Thr
835 840 845

Ser Gln Leu Arg Gln Asn Phe Gln Ala Ile Ser Ser Ser Ile Gln Ala
850 855 860

Ile Tyr Asp Arg Leu Asp Thr Ile Gln Ala Asp Gln Gln Val Asp Arg
865 870 875 880

Leu Ile Thr Gly Arg Leu Ala Ala Leu Asn Val Phe Val Ser His Thr
885 890 895

Leu Thr Lys Tyr Thr Glu Val Arg Ala Ser Arg Gln Leu Ala Gln Gln
900 905 910

Lys Val Asn Glu Cys Val Lys Ser Gln Ser Lys Arg Tyr Gly Phe Cys
915 920 925

Gly Asn Gly Thr His Ile Phe Ser Ile Val Asn Ala Ala Pro Glu Gly
930 935 940

Leu Val Phe Leu His Thr Val Leu Leu Pro Thr Gln Tyr Lys Asp Val
945 950 955 960

Glu Ala Trp Ser Gly Leu Cys Val Asp Gly Thr Asn Gly Tyr Val Leu
965 970 975

Arg Gln Pro Asn Leu Ala Leu Tyr Lys Glu Gly Asn Tyr Tyr Arg Ile
980 985 990

Thr Ser Arg Ile Met Phe Glu Pro Arg Ile Pro Thr Met Ala Asp Phe
995 1000 1005

Val Gln Ile Glu Asn Cys Asn Val Thr Phe Val Asn Ile Ser Arg
1010 1015 1020

Ser Glu Leu Gln Thr Ile Val Pro Glu Tyr Ile Asp Val Asn Lys
1025 1030 1035

Thr Leu Gln Glu Leu Ser Tyr Lys Leu Pro Asn Tyr Thr Val Pro
1040 1045 1050

Asp Leu Val Val Glu Gln Tyr Asn Gln Thr Ile Leu Asn Leu Thr

1055 1060 1065

Ser Glu Ile Ser Thr Leu Glu Asn Lys Ser Ala Glu Leu Asn Tyr
1070 1075 1080

Thr Val Gln Lys Leu Gln Thr Leu Ile Asp Asn Ile Asn Ser Thr
1085 1090 1095

Leu Val Asp Leu Lys Trp Leu Asn Arg Val Glu Thr Tyr Ile Lys
1100 1105 1110

Trp Pro Trp Trp Val Trp Leu Cys Ile Ser Val Val Leu Ile Phe
1115 1120 1125

Val Val Ser Met Leu Leu Leu Cys Cys Cys Ser Thr Gly Cys Cys
1130 1135 1140

Gly Phe Phe Ser Cys Phe Ala Ser Ser Ile Arg Gly Cys Cys Glu
1145 1150 1155

Ser Thr Lys Leu Pro Tyr Tyr Asp Val Glu Lys Ile His Ile Gln
1160 1165 1170

<210> 53
<211> 1164
<212> PRT
<213> Avian infectious bronchitis virus

<400> 53

Met Leu Gly Lys Ser Leu Phe Leu Val Thr Ile Leu Cys Ala Leu Cys
1 5 10 15

Ser Ala Asn Leu Phe Asp Pro Ala Asn Tyr Val Tyr Tyr Tyr Gln Ser
20 25 30

Ala Phe Arg Pro Ser Asn Gly Trp His Leu Gln Gly Gly Ala Tyr Ala
35 40 45

Val Val Asn Ser Ser Asn Tyr Ala Asn Asn Ala Gly Ser Ala Ser Glu
50 55 60

Cys Thr Val Gly Val Ile Lys Asp Val Tyr Asn Gln Ser Ala Ala Ser
65 70 75 80

Ile Ala Met Thr Ala Pro Leu Gln Gly Met Ala Trp Ser Lys Ser Gln
85 90 95

Phe Cys Ser Ala His Cys Asp Phe Ser Glu Ile Thr Val Phe Val Thr
100 105 110

His Cys Tyr Ser Ser Gly Ser Gly Ser Cys Pro Ile Thr Gly Met Ile
115 120 125

Ala Arg Gly His Ile Arg Ile Ser Ala Met Lys Asn Gly Ser Leu Phe
130 135 140

Tyr Asn Leu Thr Val Ser Val Ser Lys Tyr Pro Asn Phe Lys Ser Phe
145 150 155 160

Gln Cys Val Asn Asn Phe Thr Ser Val Tyr Leu Asn Gly Asp Leu Val
165 170 175

Phe Thr Ser Asn Lys Thr Thr Asp Val Thr Ser Ala Gly Val Tyr Phe
180 185 190

Lys Ala Gly Gly Pro Val Asn Tyr Ser Ile Met Lys Glu Phe Lys Val
195 200 205

Leu Ala Tyr Phe Val Asn Gly Thr Ala Gln Asp Val Ile Leu Cys Asp
210 215 220

Asn Ser Pro Lys Gly Leu Leu Ala Cys Gln Tyr Asn Thr Gly Asn Phe
225 230 235 240

Ser Asp Gly Phe Tyr Pro Phe Thr Asn Ser Thr Leu Val Arg Glu Lys
245 250 255

Phe Ile Val Tyr Arg Glu Ser Ser Val Asn Thr Thr Leu Ala Leu Thr
260 265 270

Asn Phe Thr Phe Thr Asn Val Ser Asn Ala Gln Pro Asn Ser Gly Gly
275 280 285

Val His Thr Phe His Leu Tyr Gln Thr Gln Thr Ala Gln Ser Gly Tyr
290 295 300

Tyr Asn Phe Asn Leu Ser Phe Leu Ser Gln Phe Val Tyr Lys Ala Ser
305 310 315 320

Asp Tyr Met Tyr Gly Ser Tyr His Pro Ile Cys Ala Phe Arg Pro Glu
325 330 335

Thr Ile Asn Ser Gly Leu Trp Phe Asn Ser Leu Ser Val Ser Leu Thr
340 345 350

Tyr Gly Pro Leu Gln Gly Gly Tyr Lys Gln Ser Val Phe Ser Gly Lys
355 360 365

Ala Thr Cys Cys Tyr Ala Tyr Ser Tyr Asn Gly Pro Arg Ala Cys Lys
370 375 380

Gly Val Tyr Ser Gly Glu Leu Ser Arg Asp Phe Glu Cys Gly Leu Leu
385 390 395 400

Val Tyr Val Thr Lys Ser Asp Gly Ser Arg Ile Gln Thr Arg Thr Glu
405 410 415

Pro Leu Val Leu Thr Gln His Asn Tyr Asn Asn Ile Thr Leu Asp Lys
420 425 430

Cys Val Ala Tyr Asn Ile Tyr Gly Arg Val Gly Gln Gly Phe Ile Thr
435 440 445

Asn Val Thr Asp Ser Val Ala Asn Phe Ser Tyr Leu Ala Asp Gly Gly
450 455 460

Leu Ala Ile Leu Asp Thr Ser Gly Ala Ile Asp Val Phe Val Val Gln
465 470 475 480

Gly Ser Tyr Gly Leu Asn Tyr Tyr Lys Val Asn Pro Cys Glu Asp Val
485 490 495

Asn Gln Gln Phe Val Val Ser Gly Gly Asn Ile Val Gly Ile Leu Thr
500 505 510

Ser Arg Asn Glu Thr Gly Ser Glu Gln Val Glu Asn Gln Phe Tyr Val
515 520 525

Lys Leu Thr Asn Ser Ser His Arg Arg Arg Arg Ser Ile Gly Gln Asn
530 535 540

Val Thr Ser Cys Pro Tyr Val Ser Tyr Gly Arg Phe Cys Ile Glu Pro
545 550 555 560

Asp Gly Ser Leu Lys Met Ile Val Pro Glu Glu Leu Lys Gln Phe Val
565 570 575

Ala Pro Leu Leu Asn Ile Thr Glu Ser Val Leu Ile Pro Asn Ser Phe

580 585 590

Asn Leu Thr Val Thr Asp Glu Tyr Ile Gln Thr Arg Met Asp Lys Val
595 600 605

Gln Ile Asn Cys Leu Gln Tyr Val Cys Gly Asn Ser Leu Glu Cys Arg
610 615 620

Lys Leu Phe Gln Gln Tyr Gly Pro Val Cys Asp Asn Ile Leu Ser Val
625 630 635 640

Val Asn Ser Val Ser Gln Lys Glu Asp Met Glu Leu Leu Ser Phe Tyr
645 650 655

Ser Ser Thr Lys Pro Lys Gly Tyr Asp Thr Pro Val Leu Ser Asn Val
660 665 670

Ser Thr Gly Glu Phe Asn Ile Ser Leu Leu Leu Thr Pro Pro Ser Ser
675 680 685

Pro Ser Gly Arg Ser Phe Val Glu Asp Leu Leu Phe Thr Ser Val Glu
690 695 700

Thr Val Gly Leu Pro Thr Asp Ala Glu Tyr Lys Lys Cys Thr Ala Gly
705 710 715 720

Pro Leu Gly Thr Leu Lys Asp Leu Ile Cys Ala Arg Glu Tyr Asn Gly
725 730 735

Leu Leu Val Leu Pro Pro Ile Ile Thr Ala Asp Met Gln Thr Met Tyr
740 745 750

Thr Ala Ser Leu Val Gly Ala Met Ala Phe Gly Gly Ile Thr Ser Ala
755 760 765

Ala Ala Ile Pro Phe Ala Thr Gln Ile Gln Ala Arg Ile Asn His Leu
770 775 780

Gly Ile Ala Gln Ser Leu Leu Met Lys Asn Gln Glu Lys Ile Ala Ala
785 790 795 800

Ser Phe Asn Lys Ala Ile Gly His Met Gln Glu Gly Phe Arg Ser Thr
805 810 815

Ser Leu Ala Leu Gln Gln Val Gln Asp Val Val Asn Lys Gln Ser Ala
820 825 830

Ile Leu Thr Glu Thr Met Asn Ser Leu Asn Lys Asn Phe Gly Ala Ile
835 840 845

Ser Ser Val Ile Gln Asp Ile Tyr Ala Gln Leu Asp Ala Ile Gln Ala
850 855 860

Asp Ala Gln Val Asp Arg Leu Ile Thr Gly Arg Leu Ser Ser Leu Ser
865 870 875 880

Val Leu Ala Ser Ala Lys Gln Ser Glu Tyr Ile Arg Val Ser Gln Gln
885 890 895

Arg Glu Leu Ala Thr Gln Lys Ile Asn Glu Cys Val Lys Ser Gln Ser
900 905 910

Asn Arg Tyr Gly Phe Cys Gly Ser Gly Arg His Val Leu Ser Ile Pro
915 920 925

Gln Asn Ala Pro Asn Gly Ile Val Phe Ile His Phe Thr Tyr Thr Pro
930 935 940

Glu Thr Phe Val Asn Val Thr Ala Ile Val Gly Phe Cys Val Asn Pro
945 950 955 960

Leu Asn Ala Ser Gln Tyr Ala Ile Val Pro Ala Asn Gly Arg Gly Ile
965 970 975

Phe Ile Gln Val Asn Gly Thr Tyr Tyr Ile Thr Ser Arg Asp Met Tyr
980 985 990

Met Pro Arg Asp Ile Thr Ala Gly Asp Ile Val Thr Leu Thr Ser Cys
995 1000 1005

Gln Ala Asn Tyr Val Asn Val Asn Lys Thr Val Ile Thr Thr Phe
1010 1015 1020

Val Glu Asp Asp Asp Phe Asn Phe Asp Asp Glu Leu Ser Lys Trp
1025 1030 1035

Trp Asn Asp Thr Lys His Gly Leu Pro Asp Phe Asp Asp Phe Asn
1040 1045 1050

Tyr Thr Val Pro Ile Leu Asn Ile Ser Gly Glu Ile Asp Asn Ile
1055 1060 1065

Gln Gly Val Ile Gln Gly Leu Asn Asp Ser Leu Ile Asn Leu Glu
1070 1075 1080

Glu Leu Ser Ile Ile Lys Thr Tyr Ile Lys Trp Pro Trp Tyr Val
1085 1090 1095

Trp Leu Ala Ile Gly Phe Ala Ile Ile Ile Phe Ile Leu Ile Leu
1100 1105 1110

Gly Trp Val Phe Phe Met Thr Gly Cys Cys Gly Cys Cys Cys Gly
1115 1120 1125

Cys Phe Gly Ile Ile Pro Leu Ile Ser Lys Cys Gly Lys Lys Ser
1130 1135 1140

Ser Tyr Tyr Thr Thr Phe Asp Asn Asp Val Val Thr Glu Gln Tyr
1145 1150 1155

Arg Pro Lys Lys Ser Val
1160

<210> 54
<211> 1363
<212> PRT
<213> Bovine coronoavirus

<400> 54

Met Phe Leu Ile Leu Leu Ile Ser Leu Pro Met Ala Phe Ala Val Ile
1 5 10 15

Gly Asp Leu Lys Cys Thr Thr Val Ser Ile Asn Asp Val Asp Thr Gly
20 25 30

Ala Pro Ser Ile Ser Thr Asp Ile Val Asp Val Thr Asn Gly Leu Gly
35 40 45

Thr Tyr Tyr Val Leu Asp Arg Val Tyr Leu Asn Thr Thr Leu Leu Leu
50 55 60

Asn Gly Tyr Tyr Pro Thr Ser Gly Ser Thr Tyr Arg Asn Met Ala Leu
65 70 75 80

Lys Gly Thr Leu Leu Leu Ser Arg Leu Trp Phe Lys Pro Pro Phe Leu
85 90 95

Ser Asp Phe Ile Asn Gly Ile Phe Ala Lys Val Lys Asn Thr Lys Val

100 105 110

Ile Lys Lys Gly Val Met Tyr Ser Glu Phe Pro Ala Ile Thr Ile Gly
115 120 125

Ser Thr Phe Val Asn Thr Ser Tyr Ser Val Val Val Gln Pro His Thr
130 135 140

Thr Asn Leu Asp Asn Lys Leu Gln Gly Leu Leu Glu Ile Ser Val Cys
145 150 155 160

Gln Tyr Thr Met Cys Glu Tyr Pro His Thr Ile Cys His Pro Lys Leu
165 170 175

Gly Asn Lys Arg Val Glu Leu Trp His Trp Asp Thr Gly Val Val Ser
180 185 190

Cys Leu Tyr Lys Arg Asn Phe Thr Tyr Asp Val Asn Ala Asp Tyr Leu
195 200 205

Tyr Phe His Phe Tyr Gln Glu Gly Gly Thr Phe Tyr Ala Tyr Phe Thr
210 215 220

Asp Thr Gly Val Val Thr Lys Phe Leu Phe Asn Val Tyr Leu Gly Thr
225 230 235 240

Val Leu Ser His Tyr Tyr Val Leu Pro Leu Thr Cys Ser Ser Ala Met
245 250 255

Thr Leu Glu Tyr Trp Val Thr Pro Leu Thr Ser Lys Gln Tyr Leu Leu
260 265 270

Ala Phe Asn Gln Asp Gly Val Ile Phe Asn Ala Val Asp Cys Lys Ser
275 280 285

Asp Phe Met Ser Glu Ile Lys Cys Lys Thr Leu Ser Ile Ala Pro Ser
290 295 300

Thr Gly Val Tyr Glu Leu Asn Gly Tyr Thr Val Gln Pro Ile Ala Asp
305 310 315 320

Val Tyr Arg Arg Ile Pro Asn Leu Pro Asp Cys Asn Ile Glu Ala Trp
325 330 335

Leu Asn Asp Lys Ser Val Pro Ser Pro Leu Asn Trp Glu Arg Lys Thr
340 345 350

Phe Ser Asn Cys Asn Phe Asn Met Ser Ser Leu Met Ser Phe Ile Gln
355 360 365

Ala Asp Ser Phe Thr Cys Asn Asn Ile Asp Ala Ala Lys Ile Tyr Gly
370 375 380

Met Cys Phe Ser Ser Ile Thr Ile Asp Lys Phe Ala Ile Pro Asn Gly
385 390 395 400

Arg Lys Val Asp Leu Gln Leu Gly Asn Leu Gly Tyr Leu Gln Ser Phe
405 410 415

Asn Tyr Arg Ile Asp Thr Thr Ala Thr Ser Cys Gln Leu Tyr Tyr Asn
420 425 430

Leu Pro Ala Ala Asn Val Ser Val Ser Arg Phe Asn Pro Ser Thr Trp
435 440 445

Asn Arg Arg Phe Gly Phe Thr Glu Gln Phe Val Phe Lys Pro Gln Pro
450 455 460

Val Gly Val Phe Thr His His Asp Val Val Tyr Ala Gln His Cys Phe
465 470 475 480

Lys Ala Pro Lys Asn Phe Cys Pro Cys Lys Leu Asp Gly Ser Leu Cys
485 490 495

Val Gly Asn Gly Pro Gly Ile Asp Ala Gly Tyr Lys Asn Ser Gly Ile
500 505 510

Gly Thr Cys Pro Ala Gly Thr Asn Tyr Leu Thr Cys His Asn Ala Ala
515 520 525

Gln Cys Asp Cys Leu Cys Thr Pro Asp Pro Ile Thr Ser Lys Ser Thr
530 535 540

Gly Pro Tyr Lys Cys Pro Gln Thr Lys Tyr Leu Val Gly Ile Gly Glu
545 550 555 560

His Cys Ser Gly Leu Ala Ile Lys Ser Asp Tyr Cys Gly Gly Asn Pro
565 570 575

Cys Thr Cys Gln Pro Gln Ala Phe Leu Gly Trp Ser Val Asp Ser Cys
580 585 590

Leu Gln Gly Asp Arg Cys Asn Ile Phe Ala Asn Phe Ile Phe His Asp
595 600 605

Val Asn Ser Gly Thr Thr Cys Ser Thr Asp Leu Gln Lys Ser Asn Thr
610 615 620

Asp Ile Ile Leu Gly Val Cys Val Asn Tyr Asp Leu Tyr Gly Ile Thr
625 630 635 640

Gly Gln Gly Ile Phe Val Glu Val Asn Ala Thr Tyr Tyr Asn Ser Trp
645 650 655

Gln Asn Leu Leu Tyr Asp Ser Asn Gly Asn Leu Tyr Gly Phe Arg Asp
660 665 670

Tyr Leu Thr Asn Arg Thr Phe Met Ile Arg Ser Cys Tyr Ser Gly Arg
675 680 685

Val Ser Ala Ala Phe His Ala Asn Ser Ser Glu Pro Ala Leu Leu Phe
690 695 700

Arg Asn Ile Lys Cys Asn Tyr Val Phe Asn Asn Thr Leu Ser Arg Gln
705 710 715 720

Leu Gln Pro Ile Asn Tyr Phe Asp Ser Tyr Leu Gly Cys Val Val Asn
725 730 735

Ala Asp Asn Ser Thr Ser Ser Val Val Gln Thr Cys Asp Leu Thr Val
740 745 750

Gly Ser Gly Tyr Cys Val Asp Tyr Ser Thr Lys Arg Arg Ser Arg Arg
755 760 765

Ala Ile Thr Thr Gly Tyr Arg Phe Thr Asn Phe Glu Pro Phe Thr Val
770 775 780

Asn Ser Val Asn Asp Ser Leu Glu Pro Val Gly Gly Leu Tyr Glu Ile
785 790 795 800

Gln Ile Pro Ser Glu Phe Thr Ile Gly Asn Met Glu Glu Phe Ile Gln
805 810 815

Thr Ser Ser Pro Lys Val Thr Ile Asp Cys Ser Ala Phe Val Cys Gly
820 825 830

Asp Tyr Ala Ala Cys Lys Ser Gln Leu Val Glu Tyr Gly Ser Phe Cys
835 840 845

Asp Asn Ile Asn Ala Ile Leu Thr Glu Val Asn Glu Leu Leu Asp Thr
850 855 860

Thr Gln Leu Gln Val Ala Asn Ser Leu Met Asn Gly Val Thr Leu Ser
865 870 875 880

Thr Lys Leu Lys Asp Gly Val Asn Phe Asn Val Asp Asp Ile Asn Phe
885 890 895

Ser Pro Val Leu Gly Cys Leu Gly Ser Ala Cys Asn Lys Val Ser Ser
900 905 910

Arg Ser Ala Ile Glu Asp Leu Leu Phe Ser Lys Val Lys Leu Ser Asp
915 920 925

Val Gly Phe Val Glu Ala Tyr Asn Asn Cys Thr Gly Gly Ala Glu Ile
930 935 940

Arg Asp Leu Ile Cys Val Gln Ser Tyr Asn Gly Ile Lys Val Leu Pro
945 950 955 960

Pro Leu Leu Ser Val Asn Gln Ile Ser Gly Tyr Thr Leu Ala Ala Thr
965 970 975

Ser Ala Ser Leu Phe Pro Pro Leu Ser Ala Ala Val Gly Val Pro Phe
980 985 990

Tyr Leu Asn Val Gln Tyr Arg Ile Asn Gly Ile Gly Val Thr Met Asp
995 1000 1005

Val Leu Ser Gln Asn Gln Lys Leu Ile Ala Asn Ala Phe Asn Asn
1010 1015 1020

Ala Leu Asp Ala Ile Gln Glu Gly Phe Asp Ala Thr Asn Ser Ala
1025 1030 1035

Leu Val Lys Ile Gln Ala Val Val Asn Ala Asn Ala Glu Ala Leu
1040 1045 1050

Asn Asn Leu Leu Gln Gln Leu Ser Asn Arg Phe Gly Ala Ile Ser
1055 1060 1065

Ser Ser Leu Gln Glu Ile Leu Ser Arg Leu Asp Ala Leu Glu Ala

1070 1075 1080

Gln Ala Gln Ile Asp Arg Leu Ile Asn Gly Arg Leu Thr Ala Leu
1085 1090 1095

Asn Val Tyr Val Ser Gln Gln Leu Ser Asp Ser Thr Leu Val Lys
1100 1105 1110

Phe Ser Ala Ala Gln Ala Met Glu Lys Val Asn Glu Cys Val Lys
1115 1120 1125

Ser Gln Ser Ser Arg Ile Asn Phe Cys Gly Asn Gly Asn His Ile
1130 1135 1140

Ile Ser Leu Val Gln Asn Ala Pro Tyr Gly Leu Tyr Phe Ile His
1145 1150 1155

Phe Ser Tyr Val Pro Thr Lys Tyr Val Thr Ala Lys Val Ser Pro
1160 1165 1170

Gly Leu Cys Ile Ala Gly Asp Arg Gly Ile Ala Pro Lys Ser Gly
1175 1180 1185

Tyr Phe Val Asn Val Asn Asn Thr Trp Met Phe Thr Gly Ser Gly
1190 1195 1200

Tyr Tyr Tyr Pro Glu Pro Ile Thr Gly Asn Asn Val Val Val Met
1205 1210 1215

Ser Thr Cys Ala Val Asn Tyr Thr Lys Ala Pro Asp Val Met Leu
1220 1225 1230

Asn Ile Ser Thr Pro Asn Leu His Asp Phe Lys Glu Glu Leu Asp
1235 1240 1245

Gln Trp Phe Lys Asn Gln Thr Ser Val Ala Pro Asp Leu Ser Leu
1250 1255 1260

Asp Tyr Ile Asn Val Thr Phe Leu Asp Leu Gln Asp Glu Met Asn
1265 1270 1275

Arg Leu Gln Glu Ala Ile Lys Val Leu Asn Gln Ser Tyr Ile Asn
1280 1285 1290

Leu Lys Asp Ile Gly Thr Tyr Glu Tyr Tyr Val Lys Trp Pro Trp
1295 1300 1305

Tyr Val Trp Leu Leu Ile Gly Phe Ala Gly Val Ala Met Leu Val
1310 1315 1320

Leu Leu Phe Phe Ile Cys Cys Cys Thr Gly Cys Gly Thr Ser Cys
1325 1330 1335

Phe Lys Ile Cys Gly Gly Cys Cys Asp Asp Tyr Thr Gly His Gln
1340 1345 1350

Glu Leu Val Ile Lys Thr Ser His Asp Asp
1355 1360

<210> 55
<211> 1453
<212> PRT
<213> canine coronavirus

<400> 55

Met Ile Val Leu Ile Leu Cys Leu Leu Leu Phe Ser Tyr Asn Ser Val
1 5 10 15

Ile Cys Thr Ser Asn Asn Asp Cys Val Gln Gly Asn Val Thr Gln Leu
20 25 30

Pro Gly Asn Glu Asn Ile Ile Lys Asp Phe Leu Phe His Thr Phe Lys
35 40 45

Glu Glu Pro Ser Val Val Val Gly Gly Tyr Tyr Pro Thr Glu Val Trp
50 55 60

Tyr Asn Cys Ser Arg Ser Ala Thr Thr Thr Ala Tyr Lys Asp Phe Ser
65 70 75 80

Asn Ile His Ala Phe Tyr Phe Asp Met Glu Ala Met Glu Asn Ser Thr
85 90 95

Gly Asn Ala Arg Gly Lys Pro Leu Leu Val His Val His Gly Asp Pro
100 105 110

Val Ser Ile Ile Ile Tyr Ile Ser Ala Tyr Arg Asp Asp Val Gln Pro
115 120 125

Arg Pro Leu Leu Lys His Gly Leu Leu Cys Ile Thr Lys Asn Lys Ile
130 135 140

Ile Asp Tyr Asn Thr Phe Thr Ser Ala Gln Trp Ser Ala Ile Cys Leu
145 150 155 160

Gly Asp Asp Arg Lys Ile Pro Phe Ser Val Ile Pro Thr Asp Asn Gly
165 170 175

Thr Lys Ile Phe Gly Leu Glu Trp Asn Asp Asp Tyr Val Thr Ala Tyr
180 185 190

Ile Ser Asp Arg Ser His His Leu Asn Ile Asn Asn Asn Trp Phe Asn
195 200 205

Asn Val Thr Ile Leu Tyr Ser Arg Ser Ser Ser Ala Thr Trp Gln Lys
210 215 220

Ser Ala Ala Tyr Val Tyr Gln Gly Val Ser Asn Phe Thr Tyr Tyr Lys
225 230 235 240

Leu Asn Asn Thr Asn Gly Leu Lys Ser Tyr Glu Leu Cys Glu Asp Tyr
245 250 255

Glu Tyr Cys Thr Gly Tyr Ala Thr Asn Val Phe Ala Pro Thr Val Gly
260 265 270

Gly Tyr Ile Pro His Gly Phe Ser Phe Asn Asn Trp Phe Met Arg Thr
275 280 285

Asn Ser Ser Thr Phe Val Ser Gly Arg Phe Val Thr Asn Gln Pro Leu
290 295 300

Leu Val Asn Cys Leu Trp Pro Val Pro Ser Phe Gly Val Ala Ala Gln
305 310 315 320

Gln Phe Cys Phe Glu Gly Ala Gln Phe Ser Gln Cys Asn Gly Val Ser
325 330 335

Leu Asn Asn Thr Val Asp Val Ile Arg Phe Asn Leu Asn Phe Thr Ala
340 345 350

Leu Val Gln Ser Gly Met Gly Ala Thr Val Phe Ser Leu Asn Thr Thr
355 360 365

Gly Gly Val Ile Leu Glu Ile Ser Cys Tyr Asn Asp Thr Val Ser Glu
370 375 380

Ser Ser Phe Tyr Ser Tyr Gly Glu Ile Ser Phe Gly Val Thr Asp Gly

385 390 395 400

Pro Arg Tyr Cys Phe Ala Leu Tyr Asn Gly Thr Ala Leu Lys Tyr Leu
405 410 415

Gly Thr Leu Pro Pro Ser Val Lys Glu Ile Ala Ile Ser Lys Trp Gly
420 425 430

His Phe Tyr Ile Asn Gly Tyr Asn Phe Phe Ser Thr Phe Pro Ile Asp
435 440 445

Cys Ile Ser Phe Asn Leu Thr Thr Gly Asp Ser Gly Ala Phe Trp Thr
450 455 460

Ile Ala Tyr Thr Ser Tyr Thr Asp Ala Leu Val Gln Val Glu Asn Thr
465 470 475 480

Ala Ile Lys Lys Val Thr Tyr Cys Asn Ser His Ile Asn Asn Ile Lys
485 490 495

Cys Ser Gln Leu Thr Ala Asn Leu Gln Asn Gly Phe Tyr Pro Val Ala
500 505 510

Ser Ser Glu Val Gly Leu Val Asn Lys Ser Val Val Leu Leu Pro Ser
515 520 525

Phe Tyr Ser His Thr Ser Val Asn Ile Thr Ile Asp Leu Gly Met Lys
530 535 540

Arg Ser Gly Tyr Gly Gln Pro Ile Ala Ser Thr Leu Ser Asn Ile Thr
545 550 555 560

Leu Pro Met Gln Asp Asn Asn Thr Asp Val Tyr Cys Ile Arg Ser Asn
565 570 575

Arg Phe Ser Val Tyr Phe His Ser Thr Cys Lys Ser Ser Leu Trp Asp
580 585 590

Asp Val Phe Asn Ser Asp Cys Thr Asp Val Leu Tyr Ala Thr Ala Val
595 600 605

Ile Lys Thr Gly Thr Cys Pro Phe Ser Phe Asp Lys Leu Asn Asn Tyr
610 615 620

Leu Thr Phe Asn Lys Phe Cys Leu Ser Leu Asn Pro Val Gly Ala Asn
625 630 635 640

Cys Lys Phe Asp Val Ala Ala Arg Thr Arg Thr Asn Glu Gln Val Val
645 650 655

Arg Ser Leu Tyr Val Ile Tyr Glu Glu Gly Asp Asn Ile Val Gly Val
660 665 670

Pro Ser Asp Asn Ser Gly Leu His Asp Leu Ser Val Leu His Leu Asp
675 680 685

Ser Cys Thr Asp Tyr Asn Ile Tyr Gly Ile Thr Gly Val Gly Ile Ile
690 695 700

Arg Gln Thr Asn Ser Thr Leu Leu Ser Gly Leu Tyr Tyr Thr Ser Leu
705 710 715 720

Ser Gly Asp Leu Leu Gly Phe Lys Asn Val Ser Asp Gly Val Ile Tyr
725 730 735

Ser Val Thr Pro Cys Asp Val Ser Ala His Ala Ala Val Ile Asp Gly
740 745 750

Ala Ile Val Gly Ala Met Thr Ser Ile Asn Ser Glu Leu Leu Gly Leu
755 760 765

Thr His Trp Thr Thr Thr Pro Asn Phe Tyr Tyr Tyr Ser Ile Tyr Asn
770 775 780

Tyr Thr Asn Glu Arg Thr Arg Gly Thr Ala Ile Asp Ser Asn Asp Val
785 790 795 800

Asp Cys Glu Pro Ile Ile Thr Tyr Ser Asn Ile Gly Val Cys Lys Asn
805 810 815

Gly Ala Leu Val Phe Ile Asn Val Thr His Ser Asp Gly Asp Val Gln
820 825 830

Pro Ile Ser Thr Gly Asn Val Thr Ile Pro Thr Asn Phe Thr Ile Ser
835 840 845

Val Gln Val Glu Tyr Ile Gln Val Tyr Thr Thr Pro Val Ser Ile Asp
850 855 860

Cys Ser Arg Tyr Val Cys Asn Gly Asn Pro Arg Cys Asn Lys Leu Leu
865 870 875 880

Thr Gln Tyr Val Ser Ala Cys Gln Thr Ile Glu Gln Ala Leu Ala Met
885 890 895

Gly Ala Arg Leu Glu Asn Met Glu Ile Asp Ser Met Leu Phe Val Ser
900 905 910

Glu Asn Ala Leu Lys Leu Ala Ser Val Glu Ala Phe Asn Ser Thr Glu
915 920 925

Thr Leu Asp Pro Ile Tyr Lys Glu Trp Pro Asn Ile Gly Gly Ser Trp
930 935 940

Leu Gly Gly Leu Lys Asp Ile Leu Pro Ser His Asn Ser Lys Arg Lys
945 950 955 960

Tyr Arg Ser Ala Ile Glu Asp Leu Leu Phe Asp Lys Val Val Thr Ser
965 970 975

Gly Leu Gly Thr Val Asp Glu Asp Tyr Lys Arg Cys Thr Gly Gly Tyr
980 985 990

Asp Ile Ala Asp Leu Val Cys Ala Gln Tyr Tyr Asn Gly Ile Met Val
995 1000 1005

Leu Pro Gly Val Ala Asn Asp Asp Lys Met Ala Met Tyr Thr Ala
1010 1015 1020

Ser Leu Ala Gly Gly Ile Thr Leu Gly Ser Leu Gly Gly Gly Ala
1025 1030 1035

Val Ser Ile Pro Phe Ala Ile Ala Val Gln Ala Arg Leu Asn Tyr
1040 1045 1050

Val Ala Leu Gln Thr Asp Val Leu Asn Lys Asn Gln Gln Ile Leu
1055 1060 1065

Ala Asn Ala Phe Asn Gln Ala Ile Gly Asn Ile Thr Gln Ala Phe
1070 1075 1080

Gly Lys Val Asn Asp Ala Ile His Gln Thr Ser Gln Gly Leu Ala
1085 1090 1095

Thr Val Ala Lys Val Leu Ala Lys Val Gln Asp Val Val Asn Thr
1100 1105 1110

Gln Gly Gln Ala Leu Ser His Leu Thr Leu Gln Leu Gln Asn Asn
1115 1120 1125

Phe Gln Ala Ile Ser Ser Ser Ile Ser Asp Ile Tyr Asn Arg Leu
1130 1135 1140

Asp Glu Leu Ser Ala Asp Ala Gln Val Asp Arg Leu Ile Thr Gly
1145 1150 1155

Arg Leu Thr Ala Leu Asn Ala Phe Val Ser Gln Thr Leu Thr Arg
1160 1165 1170

Gln Ala Glu Val Arg Ala Ser Arg Gln Leu Ala Lys Asp Lys Val
1175 1180 1185

Asn Glu Cys Val Arg Ser Gln Ser Gln Arg Phe Gly Phe Cys Gly
1190 1195 1200

Asn Gly Thr His Leu Phe Ser Leu Ala Asn Ala Ala Pro Asn Gly
1205 1210 1215

Met Ile Phe Phe His Thr Val Leu Leu Pro Thr Ala Tyr Glu Thr
1220 1225 1230

Val Thr Ala Trp Ser Gly Ile Cys Ala Ser Asp Gly Asp Arg Thr
1235 1240 1245

Phe Gly Leu Val Val Lys Asp Val Gln Leu Thr Leu Phe Arg Asn
1250 1255 1260

Leu Asp Asp Lys Phe Tyr Leu Thr Pro Arg Thr Met Tyr Gln Pro
1265 1270 1275

Ile Val Ala Thr Ser Ser Asp Phe Val Gln Ile Glu Gly Cys Asp
1280 1285 1290

Val Leu Phe Val Asn Ala Thr Val Ile Asp Leu Pro Ser Ile Ile
1295 1300 1305

Pro Asp Tyr Ile Asp Ile Asn Gln Thr Val Gln Asp Ile Leu Glu
1310 1315 1320

Asn Phe Arg Pro Asn Trp Thr Val Pro Glu Leu Pro Leu Asp Ile
1325 1330 1335

Phe Asn Ala Thr Tyr Leu Asn Leu Thr Gly Glu Ile Asn Asp Leu

1340 1345 1350

Glu Phe Arg Ser Glu Lys Leu His Asn Thr Thr Val Glu Leu Ala
1355 1360 1365

Ile Leu Ile Asp Asn Ile Asn Asn Thr Leu Val Asn Leu Glu Trp
1370 1375 1380

Leu Asn Arg Ile Glu Thr Tyr Val Lys Trp Pro Trp Tyr Val Trp
1385 1390 1395

Leu Leu Ile Gly Leu Val Val Ile Phe Cys Ile Pro Ile Leu Leu
1400 1405 1410

Phe Cys Cys Cys Ser Thr Gly Cys Cys Gly Cys Ile Gly Cys Leu
1415 1420 1425

Gly Ser Cys Cys His Ser Ile Cys Ser Arg Arg Gln Phe Glu Ser
1430 1435 1440

Tyr Glu Pro Ile Glu Lys Val His Val His
1445 1450

<210> 56
<211> 1464
<212> PRT
<213> Feline infectious peritonitis virus

<400> 56

Met Ile Phe Ile Ile Leu Thr Leu Leu Ser Val Ala Lys Ser Glu Asp
1 5 10 15

Ala Pro His Gly Val Thr Leu Pro Gln Phe Asn Thr Ser His Asn Asn
20 25 30

Glu Arg Phe Glu Leu Asn Phe Tyr Asn Phe Leu Gln Thr Trp Asp Ile
35 40 45

Pro Pro Asn Thr Glu Thr Ile Leu Gly Gly Tyr Leu Pro Tyr Cys Gly
50 55 60

Ala Gly Val Asn Cys Gly Trp Tyr Asn Phe Ser Gln Ser Val Gly Gln
65 70 75 80

Asn Gly Lys Tyr Ala Tyr Ile Asn Thr Gln Asn Leu Asn Ile Pro Asn
85 90 95

Val His Gly Val Tyr Phe Asp Val Arg Glu His Asn Asn Asp Gly Glu
100 105 110

Trp Asp Asp Arg Asp Lys Val Gly Leu Leu Ile Ala Ile His Gly Asn
115 120 125

Ser Lys Tyr Ser Leu Leu Met Val Leu Gln Asp Ala Val Glu Ala Asn
130 135 140

Gln Pro His Val Ala Val Lys Ile Cys His Trp Lys Pro Gly Asn Ile
145 150 155 160

Ser Ser Tyr His Ala Phe Ser Val Asn Leu Gly Asp Gly Gly Gln Cys
165 170 175

Val Phe Asn Gln Arg Phe Ser Leu Asp Thr Val Leu Thr Thr Asn Asp
180 185 190

Phe Tyr Gly Phe Gln Trp Thr Asp Thr Tyr Val Asp Ile Tyr Leu Gly
195 200 205

Gly Thr Ile Thr Lys Val Trp Val Asp Asn Asp Trp Ser Ile Val Glu
210 215 220

Ala Ser Ile Ser Tyr His Trp Asn Arg Ile Asn Tyr Gly Tyr Tyr Met
225 230 235 240

Gln Phe Val Asn Arg Thr Thr Tyr Tyr Ala Tyr Asn Asn Thr Gly Gly
245 250 255

Ala Asn Tyr Thr Gln Leu Gln Leu Ser Glu Cys His Thr Asp Tyr Cys
260 265 270

Ala Gly Tyr Ala Lys Asn Val Phe Val Pro Ile Asp Gly Lys Ile Pro
275 280 285

Glu Asp Phe Ser Phe Ser Asn Trp Phe Leu Leu Ser Asp Lys Ser Thr
290 295 300

Leu Val Gln Gly Arg Val Leu Ser Ser Gln Pro Val Phe Val Gln Cys
305 310 315 320

Leu Arg Pro Val Pro Ser Trp Ser Asn Asn Thr Ala Val Val His Phe
325 330 335

Lys Asn Asp Ala Phe Cys Pro Asn Val Thr Ala Asp Val Leu Arg Phe
340 345 350

Asn Leu Asn Phe Ser Asp Thr Asp Val Tyr Thr Asp Ser Thr Asn Asp
355 360 365

Glu Gln Leu Phe Phe Thr Phe Glu Asp Asn Thr Thr Ala Ser Ile Ala
370 375 380

Cys Tyr Ser Ser Ala Asn Val Thr Asp Phe Gln Pro Ala Asn Asn Ser
385 390 395 400

Val Ser His Ile Pro Phe Gly Lys Thr Ala His Phe Cys Phe Ala Asn
405 410 415

Phe Ser His Ser Ile Val Ser Arg Gln Phe Leu Gly Ile Leu Pro Pro
420 425 430

Thr Val Arg Glu Phe Ala Phe Gly Arg Asp Gly Ser Ile Phe Val Asn
435 440 445

Gly Tyr Lys Tyr Phe Ser Leu Pro Ala Ile Arg Ser Val Asn Phe Ser
450 455 460

Ile Ser Ser Val Glu Glu Tyr Gly Phe Trp Thr Ile Ala Tyr Thr Asn
465 470 475 480

Tyr Thr Asp Val Met Val Asp Val Asn Gly Thr Ala Ile Thr Arg Leu
485 490 495

Phe Tyr Cys Asp Ser Pro Leu Asn Arg Ile Lys Cys Gln Gln Leu Lys
500 505 510

His Glu Leu Pro Asp Gly Phe Tyr Ser Ala Ser Met Leu Val Lys Lys
515 520 525

Asp Leu Pro Lys Thr Phe Val Thr Met Pro Gln Phe Tyr His Trp Met
530 535 540

Asn Val Thr Leu His Val Val Leu Asn Asp Thr Glu Lys Lys Tyr Asp
545 550 555 560

Ile Ile Leu Ala Lys Ala Pro Glu Leu Ala Ala Leu Ala Asp Val His
565 570 575

Phe Glu Ile Ala Gln Ala Asn Gly Ser Val Thr Asn Val Thr Ser Leu

580 585 590

Cys Val Gln Ala Arg Gln Leu Ala Leu Phe Tyr Lys Tyr Thr Ser Leu
595 600 605

Gln Gly Leu Tyr Thr Tyr Ser Asn Leu Val Glu Leu Gln Asn Tyr Asp
610 615 620

Cys Pro Phe Ser Pro Gln Gln Phe Asn Asn Tyr Leu Gln Phe Glu Thr
625 630 635 640

Leu Cys Phe Asp Val Asn Pro Ala Val Ala Gly Cys Lys Trp Ser Leu
645 650 655

Val His Asp Val Gln Trp Arg Thr Gln Phe Ala Thr Ile Thr Val Ser
660 665 670

Tyr Lys His Gly Ser Met Ile Thr Thr His Ala Lys Gly His Ser Trp
675 680 685

Gly Phe Gln Asp Thr Ser Val Leu Val Lys Asp Glu Cys Thr Asp Tyr
690 695 700

Asn Ile Tyr Gly Phe Gln Gly Thr Gly Ile Ile Arg Asn Thr Thr Ser
705 710 715 720

Arg Leu Val Ala Gly Leu Tyr Tyr Thr Ser Ile Ser Gly Asp Leu Leu
725 730 735

Ala Phe Lys Asn Ser Thr Thr Gly Glu Ile Phe Thr Val Val Pro Cys
740 745 750

Asp Leu Thr Ala Gln Val Ala Val Ile Asn Asp Glu Ile Val Gly Ala
755 760 765

Ile Thr Ala Val Asn Gln Thr Asp Leu Phe Glu Phe Val Asn Asn Thr
770 775 780

Gln Ala Arg Arg Ser Arg Ser Ser Thr Pro Asn Phe Val Thr Ser Tyr
785 790 795 800

Thr Met Pro Gln Phe Tyr Tyr Ile Thr Lys Trp Asn Asn Asp Thr Ser
805 810 815

Ser Asn Cys Thr Ser Ala Ile Thr Tyr Ser Ser Phe Ala Ile Cys Asn
820 825 830

Thr Gly Glu Ile Lys Tyr Val Asn Val Thr His Val Glu Ile Val Asp
835 840 845

Asp Ser Ile Gly Val Ile Lys Pro Val Ser Thr Gly Asn Ile Ser Ile
850 855 860

Pro Lys Asn Phe Thr Val Ala Val Gln Ala Glu Tyr Ile Gln Ile Gln
865 870 875 880

Val Lys Pro Val Val Val Asp Cys Ala Thr Tyr Val Cys Asn Gly Asn
885 890 895

Thr His Cys Leu Lys Leu Leu Thr Gln Tyr Thr Ser Ala Cys Gln Thr
900 905 910

Ile Glu Asn Ala Leu Asn Leu Gly Ala Arg Leu Glu Ser Leu Met Leu
915 920 925

Asn Asp Met Ile Thr Val Ser Asp Arg Gly Leu Glu Leu Ala Thr Val
930 935 940

Glu Arg Phe Asn Ala Thr Ala Leu Gly Gly Glu Lys Leu Gly Gly Leu
945 950 955 960

Tyr Phe Asp Gly Leu Ser Ser Leu Leu Pro Pro Lys Ile Gly Lys Arg
965 970 975

Ser Ala Val Glu Asp Leu Leu Phe Asn Lys Val Val Thr Ser Gly Leu
980 985 990

Gly Thr Val Asp Asp Asp Tyr Lys Lys Cys Ser Ser Gly Thr Asp Val
995 1000 1005

Ala Asp Leu Val Cys Ala Gln Tyr Tyr Asn Gly Ile Met Val Leu
1010 1015 1020

Pro Gly Val Val Asp Gly Asn Lys Met Ser Met Tyr Thr Ala Ser
1025 1030 1035

Leu Ile Gly Gly Met Ala Leu Gly Ser Ile Thr Ser Ala Val Ala
1040 1045 1050

Val Pro Phe Ala Met Gln Val Gln Ala Arg Leu Asn Tyr Val Ala
1055 1060 1065

Leu Gln Thr Asp Val Leu Gln Glu Asn Gln Lys Ile Leu Ala Asn
1070 1075 1080

Ala Phe Asn Asn Ala Ile Gly Asn Ile Thr Leu Ala Leu Gly Lys
1085 1090 1095

Val Ser Asn Ala Ile Thr Thr Thr Ser Asp Gly Phe Asn Ser Met
1100 1105 1110

Ala Ser Ala Leu Thr Lys Ile Gln Ser Val Val Asn Gln Gln Gly
1115 1120 1125

Glu Ala Leu Ser Gln Leu Thr Ser Gln Leu Gln Lys Asn Phe Gln
1130 1135 1140

Ala Ile Ser Ser Ser Ile Ala Glu Ile Tyr Asn Arg Leu Glu Lys
1145 1150 1155

Val Glu Ala Asp Ala Gln Val Asp Arg Leu Ile Thr Gly Arg Leu
1160 1165 1170

Ala Ala Leu Asn Ala Tyr Val Ser Gln Thr Leu Thr Gln Tyr Ala
1175 1180 1185

Glu Val Lys Ala Ser Arg Gln Ile Ala Leu Glu Lys Val Asn Glu
1190 1195 1200

Cys Val Lys Ser Gln Ser Asn Arg Tyr Gly Phe Cys Gly Asn Gly
1205 1210 1215

Thr His Leu Phe Ser Leu Val Asn Ser Ala Pro Glu Gly Leu Leu
1220 1225 1230

Phe Phe His Thr Val Leu Leu Pro Thr Glu Trp Glu Glu Val Thr
1235 1240 1245

Ala Trp Ser Gly Ile Cys Val Asn Asp Thr Tyr Ala Tyr Val Leu
1250 1255 1260

Lys Asp Phe Asp His Ser Ile Phe Ser Tyr Asn Gly Thr Tyr Met
1265 1270 1275

Val Thr Pro Arg Asn Met Phe Gln Pro Arg Lys Pro Gln Met Ser
1280 1285 1290

Asp Phe Val Gln Ile Thr Ser Cys Glu Val Thr Phe Leu Asn Met
1295 1300 1305

Thr Tyr Thr Thr Phe Gln Glu Ile Val Ile Asp Tyr Ile Asp Ile
1310 1315 1320

Asn Lys Thr Ile Ala Asp Met Leu Glu Gln Tyr Asn Pro Asn Tyr
1325 1330 1335

Thr Thr Pro Glu Leu Asn Leu Leu Leu Asp Ile Phe Asn Gln Thr
1340 1345 1350

Lys Leu Asn Leu Thr Ala Glu Ile Asp Gln Leu Glu Gln Arg Ala
1355 1360 1365

Asp Asn Leu Thr Thr Ile Ala His Glu Leu Gln Gln Tyr Ile Asp
1370 1375 1380

Asn Leu Asn Lys Thr Leu Val Asp Leu Asp Trp Leu Asn Arg Ile
1385 1390 1395

Glu Thr Tyr Val Lys Trp Pro Trp Tyr Val Trp Leu Leu Ile Gly
1400 1405 1410

Leu Val Val Val Phe Cys Ile Pro Leu Leu Leu Phe Cys Cys Leu
1415 1420 1425

Ser Thr Gly Phe Cys Gly Cys Phe Gly Cys Val Gly Ser Cys Cys
1430 1435 1440

His Ser Leu Cys Ser Arg Arg Gln Phe Glu Thr Tyr Glu Pro Ile
1445 1450 1455

Glu Lys Val His Ile His
1460

<210> 57
<211> 1235
<212> PRT
<213> Mouse hepatitis virus

<400> 57

Met Leu Phe Val Phe Ile Leu Leu Leu Pro Ser Cys Leu Gly Tyr Ile
1 5 10 15

Gly Asp Phe Arg Cys Ile Gln Thr Val Asn Tyr Asn Gly Asn Asn Ala
20 25 30

Ser Ala Pro Ser Ile Ser Thr Glu Ala Val Asp Val Ser Lys Gly Arg
35 40 45

Gly Thr Tyr Tyr Val Leu Asp Arg Val Tyr Leu Asn Ala Thr Leu Leu
50 55 60

Leu Thr Gly Tyr Tyr Pro Val Asp Gly Ser Asn Tyr Arg Asn Leu Ala
65 70 75 80

Leu Thr Gly Thr Asn Thr Leu Ser Leu Thr Trp Phe Lys Pro Pro Phe
85 90 95

Leu Ser Glu Phe Asn Asp Gly Ile Phe Ala Lys Val Gln Asn Leu Lys
100 105 110

Thr Asn Thr Pro Thr Gly Ala Thr Ser Tyr Phe Pro Thr Ile Val Ile
115 120 125

Gly Ser Leu Phe Gly Asn Thr Ser Tyr Thr Val Val Leu Glu Pro Tyr
130 135 140

Asn Asn Ile Ile Met Ala Ser Val Cys Thr Tyr Thr Ile Cys Gln Leu
145 150 155 160

Pro Tyr Thr Pro Cys Lys Pro Asn Thr Asn Gly Asn Arg Val Ile Gly
165 170 175

Phe Trp His Thr Asp Val Lys Pro Pro Ile Cys Leu Leu Lys Arg Asn
180 185 190

Phe Thr Phe Asn Val Asn Ala Pro Trp Leu Tyr Phe His Phe Tyr Gln
195 200 205

Gln Gly Gly Thr Phe Tyr Ala Tyr Tyr Ala Asp Lys Pro Ser Ala Thr
210 215 220

Thr Phe Leu Phe Ser Val Tyr Ile Gly Asp Ile Leu Thr Gln Tyr Phe
225 230 235 240

Val Leu Pro Phe Ile Cys Thr Pro Thr Ala Gly Ser Thr Leu Ala Pro
245 250 255

Leu Tyr Trp Val Thr Pro Leu Leu Lys Arg Gln Tyr Leu Phe Asn Phe
260 265 270

Asn Glu Lys Gly Val Ile Thr Ser Ala Val Asp Cys Ala Ser Ser Tyr
275 280 285

Ile Ser Glu Ile Lys Cys Lys Thr Gln Ser Leu Leu Pro Ser Thr Gly
290 295 300

Val Tyr Asp Leu Ser Gly Tyr Thr Val Gln Pro Val Gly Val Val Tyr
305 310 315 320

Arg Arg Val Pro Asn Leu Pro Asp Cys Lys Ile Glu Glu Trp Leu Thr
325 330 335

Ala Lys Ser Val Pro Ser Pro Leu Asn Trp Glu Arg Arg Thr Phe Gln
340 345 350

Asn Cys Asn Phe Asn Leu Ser Ser Leu Leu Arg Tyr Val Gln Ala Glu
355 360 365

Ser Leu Ser Cys Asn Asn Ile Asp Ala Ser Lys Val Tyr Gly Met Cys
370 375 380

Phe Gly Ser Val Ser Val Asp Lys Phe Ala Ile Pro Arg Ser Arg Gln
385 390 395 400

Ile Asp Leu Gln Ile Gly Asn Ser Gly Phe Leu Gln Thr Ala Asn Tyr
405 410 415

Lys Ile Asp Thr Ala Ala Thr Ser Cys Gln Leu Tyr Tyr Ser Leu Pro
420 425 430

Lys Asn Asn Val Thr Ile Asn Asn Tyr Asn Pro Ser Ser Trp Asn Arg
435 440 445

Arg Tyr Gly Phe Lys Val Asn Asp Arg Cys Gln Ile Phe Ala Asn Ile
450 455 460

Leu Leu Asn Gly Ile Asn Ser Gly Thr Thr Cys Ser Thr Asp Leu Gln
465 470 475 480

Leu Pro Asn Thr Glu Val Ala Thr Gly Val Cys Val Arg Tyr Asp Leu
485 490 495

Tyr Gly Ile Thr Gly Gln Gly Val Phe Lys Glu Val Lys Ala Asp Tyr
500 505 510

Tyr Asn Ser Trp Gln Ala Leu Leu Tyr Asp Val Asn Gly Asn Leu Asn
515 520 525

Gly Phe Arg Asp Leu Thr Thr Asn Lys Thr Tyr Thr Ile Arg Ser Cys
530 535 540

Tyr Ser Gly Arg Val Ser Ala Ala Tyr His Lys Glu Ala Pro Glu Pro
545 550 555 560

Ala Leu Leu Tyr Arg Asn Ile Asn Cys Ser Tyr Val Phe Thr Asn Asn
565 570 575

Ile Ser Arg Glu Glu Asn Pro Leu Asn Tyr Phe Asp Ser Tyr Leu Gly
580 585 590

Cys Val Val Asn Ala Asp Asn Arg Thr Asp Glu Ala Leu Pro Asn Cys
595 600 605

Asn Leu Arg Met Gly Ala Gly Leu Cys Val Asp Tyr Ser Lys Ser Arg
610 615 620

Arg Ala Arg Arg Ser Val Ser Thr Gly Tyr Arg Leu Thr Thr Phe Glu
625 630 635 640

Pro Tyr Met Pro Met Leu Val Asn Asp Ser Val Gln Ser Val Gly Gly
645 650 655

Leu Tyr Glu Met Gln Ile Pro Thr Asn Phe Thr Ile Gly His His Glu
660 665 670

Glu Phe Ile Gln Ile Arg Ala Pro Lys Val Thr Ile Asp Cys Ala Ala
675 680 685

Phe Val Cys Gly Asp Asn Ala Ala Cys Arg Gln Gln Leu Val Glu Tyr
690 695 700

Gly Ser Phe Cys Asp Asn Val Asn Ala Ile Leu Asn Glu Val Asn Asn
705 710 715 720

Leu Leu Asp Asn Met Gln Leu Gln Val Ala Ser Ala Leu Met Gln Gly
725 730 735

Val Thr Ile Ser Ser Arg Leu Pro Asp Gly Ile Ser Gly Pro Ile Asp
740 745 750

Asp Ile Asn Phe Ser Pro Leu Leu Gly Cys Ile Gly Ser Thr Cys Ala

755 760 765

Glu Asp Gly Asn Gly Pro Ser Ala Ile Arg Gly Arg Ser Ala Ile Glu
770 775 780

Asp Leu Leu Phe Asp Lys Val Lys Leu Ser Asp Val Gly Phe Val Glu
785 790 795 800

Ala Tyr Asn Asn Cys Thr Gly Gly Gln Glu Val Arg Asp Leu Leu Cys
805 810 815

Val Gln Ser Phe Asn Gly Ile Lys Val Leu Pro Pro Val Leu Ser Glu
820 825 830

Ser Gln Ile Ser Gly Tyr Thr Ala Gly Ala Thr Ala Ala Ala Met Phe
835 840 845

Pro Pro Trp Thr Ala Ala Ala Gly Val Pro Phe Ser Leu Asn Val Gln
850 855 860

Tyr Arg Ile Asn Gly Leu Gly Val Thr Met Asn Val Leu Ser Glu Asn
865 870 875 880

Gln Lys Met Ile Ala Ser Ala Phe Asn Asn Ala Leu Gly Ala Ile Gln
885 890 895

Glu Gly Phe Asp Ala Thr Asn Ser Ala Leu Gly Lys Ile Gln Ser Val
900 905 910

Val Asn Ala Asn Ala Glu Ala Leu Asn Asn Leu Leu Asn Gln Leu Ser
915 920 925

Asn Arg Phe Gly Ala Ile Ser Ala Ser Leu Gln Glu Ile Leu Thr Arg
930 935 940

Leu Asp Ala Val Glu Ala Lys Ala Gln Ile Asp Arg Leu Ile Asn Gly
945 950 955 960

Arg Leu Thr Ala Leu Asn Ala Tyr Ile Ser Lys Gln Leu Ser Asp Ser
965 970 975

Thr Leu Ile Lys Phe Ser Ala Ala Gln Ala Ile Glu Lys Val Asn Glu
980 985 990

Cys Val Lys Ser Gln Thr Thr Arg Ile Asn Phe Cys Gly Asn Gly Asn
995 1000 1005

His Ile Leu Ser Leu Val Gln Asn Ala Pro Tyr Gly Leu Cys Phe
1010 1015 1020

Ile His Phe Ser Tyr Val Pro Thr Ser Phe Lys Thr Ala Asn Val
1025 1030 1035

Ser Pro Gly Leu Cys Ile Ser Gly Asp Arg Gly Leu Ala Pro Lys
1040 1045 1050

Ala Gly Tyr Phe Val Gln Asp Asn Gly Glu Trp Lys Phe Thr Gly
1055 1060 1065

Ser Asn Tyr Tyr Tyr Pro Glu Pro Ile Thr Asp Lys Asn Ser Val
1070 1075 1080

Ala Met Ile Ser Cys Ala Val Asn Tyr Thr Lys Ala Pro Glu Val
1085 1090 1095

Phe Leu Asn Asn Ser Ile Pro Asn Leu Pro Asp Phe Lys Glu Glu
1100 1105 1110

Leu Asp Lys Trp Phe Lys Asn Gln Thr Ser Ile Ala Pro Asp Leu
1115 1120 1125

Ser Leu Asp Phe Glu Lys Leu Asn Val Thr Phe Leu Asp Leu Thr
1130 1135 1140

Tyr Glu Met Asn Arg Ile Gln Asp Ala Ile Lys Lys Leu Asn Glu
1145 1150 1155

Ser Tyr Ile Asn Leu Lys Glu Val Gly Thr Tyr Glu Met Tyr Val
1160 1165 1170

Lys Trp Pro Trp Tyr Val Trp Leu Leu Ile Gly Leu Ala Gly Val
1175 1180 1185

Ala Val Cys Val Leu Leu Phe Phe Ile Cys Cys Cys Thr Gly Cys
1190 1195 1200

Gly Ser Cys Cys Phe Arg Lys Cys Gly Ser Cys Cys Asp Glu Tyr
1205 1210 1215

Gly Gly His Gln Asp Ser Ile Val Ile His Asn Ile Ser Ala His
1220 1225 1230

Glu Asp
1235

<210> 58
<211> 1363
<212> PRT
<213> human coronavirus

<400> 58

Met Phe Leu Ile Leu Leu Ile Ser Leu Pro Met Ala Leu Ala Val Ile
1 5 10 15

Gly Asp Leu Lys Cys Thr Thr Val Ala Ile Asn Asp Val Asp Thr Gly
20 25 30

Val Pro Ser Thr Ser Thr Asp Ile Val Asp Val Thr Asn Gly Leu Gly
35 40 45

Thr Tyr Tyr Val Leu Asp Arg Val Tyr Leu Asn Thr Thr Leu Leu Leu
50 55 60

Asn Gly Tyr Tyr Pro Thr Ser Gly Ser Thr Tyr Arg Asn Met Ala Leu
65 70 75 80

Lys Gly Thr Leu Leu Leu Ser Arg Leu Trp Phe Lys Pro Pro Phe Leu
85 90 95

Ser Asp Phe Ile Asn Gly Ile Phe Ala Lys Val Lys Asn Thr Lys Val
100 105 110

Ile Lys His Gly Val Met Tyr Ser Glu Phe Pro Ala Ile Thr Ile Gly
115 120 125

Ser Thr Phe Val Asn Thr Ser Tyr Ser Val Val Val Gln Pro His Thr
130 135 140

Thr Asn Leu Asp Asn Lys Leu Gln Gly Leu Leu Glu Ile Ser Val Cys
145 150 155 160

Gln Tyr Thr Met Cys Glu Tyr Pro Asn Thr Ile Cys His Pro Asn Leu
165 170 175

Gly Asn Arg Arg Val Glu Leu Trp His Trp Asp Thr Gly Val Val Ser
180 185 190

Cys Leu Tyr Lys Arg Asn Phe Thr Tyr Asp Val Asn Ala Asp Tyr Leu

195 200 205

Tyr Phe His Phe Tyr Gln Glu Gly Gly Ile Phe Tyr Ala Tyr Phe Thr
210 215 220

Asp Thr Gly Val Val Thr Lys Phe Leu Phe Asn Val Tyr Leu Gly Thr
225 230 235 240

Val Leu Ser Tyr Tyr Tyr Val Met Pro Leu Thr Cys Asn Ser Ala Met
245 250 255

Thr Leu Glu Tyr Trp Val Thr Pro Leu Thr Ser Lys Gln Tyr Leu Leu
260 265 270

Ala Phe Asn Gln Asp Gly Val Ile Phe Asn Ala Val Asp Cys Lys Ser
275 280 285

Asp Phe Met Ser Glu Ile Lys Cys Lys Thr Leu Ser Ile Ala Pro Ser
290 295 300

Thr Gly Val Tyr Glu Leu Asn Gly Tyr Thr Val Gln Pro Ile Ala Asp
305 310 315 320

Val Tyr Arg Arg Ile Pro Asn Leu Pro Asp Cys Asn Ile Glu Ala Trp
325 330 335

Leu Asn Asp Lys Ser Val Pro Ser Pro Leu Asn Trp Glu Arg Lys Thr
340 345 350

Phe Ser Asn Cys Asn Phe Asn Met Ser Ser Leu Met Ser Phe Ile Gln
355 360 365

Ala Asp Ser Phe Thr Cys Asn Asn Ile Asp Ala Ala Lys Ile Tyr Gly
370 375 380

Met Cys Phe Ser Ser Ile Thr Ile Asp Lys Phe Ala Ile Pro Asn Gly
385 390 395 400

Arg Lys Val Asp Leu Gln Leu Gly Asn Leu Gly Tyr Leu Gln Ser Phe
405 410 415

Asn Tyr Arg Ile Asp Thr Thr Ala Thr Ser Cys Gln Leu Tyr Tyr Asn
420 425 430

Leu Pro Ala Ala Asn Val Ser Val Ser Arg Phe Asn Pro Ser Ile Trp
435 440 445

Asn Arg Arg Phe Gly Phe Thr Glu Gln Ser Val Phe Lys Pro Gln Pro
450 455 460

Ala Gly Val Phe Thr Asp His Asp Val Val Tyr Ala Gln His Cys Phe
465 470 475 480

Lys Ala Pro Thr Asn Phe Cys Pro Cys Lys Leu Asp Gly Ser Leu Cys
485 490 495

Val Gly Asn Gly Pro Gly Ile Asp Ala Gly Tyr Lys Asn Ser Gly Ile
500 505 510

Gly Thr Cys Pro Ala Gly Thr Asn Tyr Leu Thr Cys His Asn Ala Val
515 520 525

Gln Cys Asn Cys Leu Cys Thr Pro Asp Pro Ile Thr Ser Lys Ser Thr
530 535 540

Gly Pro Tyr Lys Cys Pro Gln Thr Lys Tyr Leu Val Gly Ile Gly Glu
545 550 555 560

His Cys Ser Gly Leu Ala Ile Lys Ser Asp Tyr Cys Gly Gly Asn Pro
565 570 575

Cys Thr Cys Gln Pro Gln Ala Phe Leu Gly Trp Ser Val Asp Ser Cys
580 585 590

Leu Gln Gly Asp Arg Cys Asn Ile Phe Ala Asn Phe Ile Leu His Asp
595 600 605

Val Asn Ser Gly Thr Thr Cys Ser Thr Asp Leu Gln Lys Ser Asn Thr
610 615 620

Asp Ile Ile Leu Gly Val Cys Val Asn Tyr Asp Leu Tyr Gly Ile Thr
625 630 635 640

Gly Gln Gly Ile Phe Val Glu Val Asn Ala Pro Tyr Tyr Asn Ser Trp
645 650 655

Gln Asn Leu Leu Tyr Asp Ser Asn Gly Asn Leu Tyr Gly Phe Arg Asp
660 665 670

Tyr Leu Thr Asn Arg Thr Phe Met Ile Arg Ser Cys Tyr Ser Gly Arg
675 680 685

Val Ser Ala Ala Phe His Ala Asn Ser Ser Glu Pro Ala Leu Leu Phe
690 695 700

Arg Asn Ile Lys Cys Asn Tyr Val Phe Asn Asn Thr Leu Ser Arg Gln
705 710 715 720

Leu Gln Pro Ile Asn Tyr Phe Asp Ser Tyr Leu Gly Cys Val Val Asn
725 730 735

Ala Asp Asn Ser Thr Ala Ser Ala Val Gln Thr Cys Asp Leu Thr Val
740 745 750

Gly Ser Gly Tyr Cys Val Asp Tyr Ser Thr Lys Arg Arg Ser Arg Arg
755 760 765

Ala Ile Thr Thr Gly Tyr Arg Phe Thr Asn Phe Glu Pro Phe Thr Val
770 775 780

Asn Ser Val Asn Asp Ser Leu Glu His Val Gly Gly Leu Tyr Glu Ile
785 790 795 800

Gln Ile Pro Ser Glu Phe Thr Ile Gly Asn Met Glu Glu Phe Ile Gln
805 810 815

Thr Ser Ser Pro Lys Val Thr Ile Asp Cys Ser Ala Phe Val Cys Gly
820 825 830

Asp Cys Ala Ala Cys Lys Ser Gln Leu Val Glu Tyr Gly Ser Phe Cys
835 840 845

Asp Asn Ile Asn Ala Ile Leu Thr Glu Val Asn Glu Leu Leu Asp Thr
850 855 860

Thr Gln Leu Gln Val Ala Asn Ser Leu Met Asn Gly Val Thr Leu Ser
865 870 875 880

Thr Lys Leu Lys Asp Gly Val Asn Phe Asn Val Asp Asp Val Asn Phe
885 890 895

Ser Pro Val Leu Gly Cys Leu Gly Ser Glu Cys Asn Lys Val Ser Ser
900 905 910

Arg Ser Ala Ile Glu Asp Leu Leu Phe Ser Lys Val Arg Leu Ser Asp
915 920 925

Val Gly Phe Val Glu Ala Tyr Asn Asn Cys Thr Gly Gly Ala Gly Ile
930 935 940

Arg Asp Leu Ile Cys Val Gln Ser Tyr Asn Gly Ile Lys Val Leu Pro
945 950 955 960

Pro Leu Leu Ser Asp Asn Gln Ile Ser Gly Tyr Thr Leu Ala Ala Thr
965 970 975

Ser Ala Asn Leu Phe Pro Pro Trp Ser Ala Ala Ala Gly Val Pro Phe
980 985 990

Tyr Leu Asn Val Gln Tyr Arg Ile Asn Gly Ile Gly Val Thr Met Asp
995 1000 1005

Val Leu Ser Gln Asn Gln Lys Leu Ile Ala Asn Ala Phe Asn Asn
1010 1015 1020

Ala Leu Asp Ala Ile Gln Glu Gly Phe Asp Ala Thr Asn Ser Ala
1025 1030 1035

Leu Val Lys Ile Gln Ala Val Val Asn Ala Asp Ala Glu Ala Leu
1040 1045 1050

Asn Asn Leu Leu Gln Gln Leu Ser Asn Arg Phe Gly Ala Ile Ser
1055 1060 1065

Ser Ser Leu Gln Glu Ile Leu Ser Arg Leu Asp Ala Leu Glu Ala
1070 1075 1080

Gln Ala Gln Ile Asp Arg Leu Ile Asn Gly Arg Leu Thr Ala Leu
1085 1090 1095

Asp Ala Tyr Val Ser Gln Gln Leu Ser Asp Ser Thr Leu Val Lys
1100 1105 1110

Phe Ser Ala Ala Gln Ala Met Glu Lys Val Asn Glu Cys Val Lys
1115 1120 1125

Ser Gln Ser Ser Arg Ile Asn Phe Cys Gly Asn Gly Asn His Ile
1130 1135 1140

Ile Ser Leu Val Gln Asn Ala Pro Tyr Gly Leu Tyr Phe Ile His
1145 1150 1155

Phe Ser Tyr Val Pro Thr Lys Tyr Val Thr Ala Lys Val Ser Pro

1160 1165 1170

Gly Leu Cys Ile Ala Gly Asp Arg Gly Ile Ala Pro Lys Ser Gly
1175 1180 1185

Tyr Phe Val Asn Val Asn Asn Thr Trp Met Phe Thr Gly Ser Arg
1190 1195 1200

Tyr Tyr Tyr Pro Glu Pro Ile Thr Gly Asn Asn Val Val Val Met
1205 1210 1215

Ser Thr Cys Ala Val Asn Tyr Thr Lys Ala Pro Asp Val Met Leu
1220 1225 1230

Asn Ile Ser Thr Pro Asn Leu Pro Asp Phe Lys Glu Glu Leu Asp
1235 1240 1245

Gln Trp Phe Lys Asn Gln Thr Leu Val Ala Pro Asp Leu Ser Leu
1250 1255 1260

Asp Tyr Ile Asn Val Thr Phe Leu Asp Leu Gln Asp Glu Met Asn
1265 1270 1275

Arg Leu Gln Glu Ala Ile Lys Val Leu Asn Gln Ser Tyr Ile Asn
1280 1285 1290

Leu Lys Asp Ile Gly Thr Tyr Glu Tyr Tyr Val Lys Trp Pro Trp
1295 1300 1305

Tyr Val Trp Leu Leu Ile Gly Phe Ala Gly Val Ala Met Leu Val
1310 1315 1320

Leu Leu Phe Phe Ile Cys Cys Cys Thr Gly Cys Gly Thr Ser Cys
1325 1330 1335

Phe Lys Lys Cys Gly Gly Cys Cys Asp Asp Tyr Thr Gly His Gln
1340 1345 1350

Glu Leu Val Ile Lys Thr Ser His Glu Gly
1355 1360

<210> 59
<211> 1383
<212> PRT
<213> Porcine epidemic diarrhea virus

<400> 59

Met Arg Ser Leu Ile Tyr Phe Trp Leu Leu Leu Pro Val Leu Pro Thr
1 5 10 15

Leu Ser Leu Pro Gln Asp Val Thr Arg Cys Gln Ser Thr Thr Asn Phe
20 25 30

Arg Arg Phe Phe Ser Lys Phe Asn Val Gln Ala Pro Ala Val Val Val
35 40 45

Leu Gly Gly Tyr Leu Pro Ser Met Asn Ser Ser Ser Trp Tyr Cys Gly
50 55 60

Thr Gly Ile Glu Thr Ala Ser Gly Val His Gly Ile Phe Leu Ser Tyr
65 70 75 80

Ile Asp Ser Gly Gln Gly Phe Glu Ile Gly Ile Ser Gln Glu Pro Phe
85 90 95

Asp Pro Ser Gly Tyr Gln Leu Tyr Leu His Lys Ala Thr Asn Gly Asn
100 105 110

Thr Asn Ala Thr Ala Arg Leu Arg Ile Cys Gln Phe Pro Asp Asn Lys
115 120 125

Thr Leu Gly Pro Thr Val Asn Asp Val Thr Thr Gly Arg Asn Cys Leu
130 135 140

Phe Asn Lys Ala Ile Pro Ala Tyr Met Arg Asp Gly Lys Asp Ile Val
145 150 155 160

Val Gly Ile Thr Trp Asp Asn Asp Arg Val Thr Val Phe Ala Asp Lys
165 170 175

Ile Tyr His Phe Tyr Leu Lys Asn Asp Trp Ser Arg Val Ala Thr Arg
180 185 190

Cys Tyr Asn Arg Arg Ser Cys Ala Met Gln Tyr Val Tyr Thr Pro Thr
195 200 205

Tyr Tyr Met Leu Asn Val Thr Ser Ala Gly Glu Asp Gly Ile Tyr Tyr
210 215 220

Glu Pro Cys Thr Ala Asn Cys Thr Gly Tyr Ala Ala Asn Val Phe Ala
225 230 235 240

Thr Asp Ser Asn Gly His Ile Pro Glu Gly Phe Ser Phe Asn Asn Trp
245 250 255

Phe Leu Leu Ser Asn Asp Ser Thr Leu Leu His Gly Lys Val Val Ser
260 265 270

Asn Gln Pro Leu Leu Val Asn Cys Leu Leu Ala Ile Pro Lys Ile Tyr
275 280 285

Gly Leu Gly Gln Phe Phe Ser Phe Asn His Thr Met Asp Gly Val Cys
290 295 300

Asn Gly Ala Ala Val Asp Arg Ala Pro Glu Ala Leu Arg Phe Asn Ile
305 310 315 320

Asn Asp Thr Ser Val Ile Leu Ala Glu Gly Ser Ile Val Leu His Thr
325 330 335

Ala Leu Gly Thr Asn Leu Ser Phe Val Cys Ser Asn Ser Ser Asp Pro
340 345 350

His Leu Ala Ile Phe Ala Ile Pro Leu Gly Ala Thr Glu Val Pro Tyr
355 360 365

Tyr Cys Phe Leu Lys Val Asp Thr Tyr Asn Ser Thr Val Tyr Lys Phe
370 375 380

Leu Ala Val Leu Pro Ser Thr Val Arg Glu Ile Val Ile Thr Lys Tyr
385 390 395 400

Gly Asp Val Tyr Val Asn Gly Phe Gly Tyr Leu His Leu Gly Leu Leu
405 410 415

Asp Ala Val Thr Ile Tyr Phe Thr Gly His Gly Thr Asp Asp Asp Val
420 425 430

Ser Gly Phe Trp Thr Ile Ala Ser Thr Asn Phe Val Asp Ala Leu Ile
435 440 445

Glu Val Gln Gly Thr Ser Ile Gln Arg Ile Leu Tyr Cys Asp Asp Pro
450 455 460

Val Ser Gln Leu Lys Cys Ser Gln Val Ala Phe Asp Leu Asp Asp Gly
465 470 475 480

Phe Tyr Pro Ile Ser Ser Arg Asn Leu Leu Ser His Glu Gln Pro Ile

485 490 495

Ser Phe Val Thr Leu Pro Ser Phe Asn Asp His Ser Phe Val Asn Ile
500 505 510

Thr Val Ser Ala Ala Phe Gly Gly Leu Ser Ser Ala Asn Leu Val Ala
515 520 525

Ser Asp Thr Thr Ile Asn Gly Phe Ser Ser Phe Cys Val Asp Thr Arg
530 535 540

Gln Phe Thr Ile Thr Leu Phe Tyr Asn Val Thr Asn Ser Tyr Gly Tyr
545 550 555 560

Val Ser Lys Ser Gln Asp Ser Asn Cys Pro Phe Thr Leu Gln Ser Val
565 570 575

Asn Asp Tyr Leu Ser Phe Ser Lys Phe Cys Val Ser Thr Ser Leu Leu
580 585 590

Ala Gly Ala Cys Thr Ile Asp Leu Phe Gly Tyr Pro Ala Phe Gly Ser
595 600 605

Gly Val Lys Leu Thr Ser Leu Tyr Phe Gln Phe Thr Lys Gly Glu Leu
610 615 620

Ile Thr Gly Thr Pro Lys Pro Leu Glu Gly Ile Thr Asp Val Ser Phe
625 630 635 640

Met Thr Leu Asp Val Cys Thr Lys Tyr Thr Ile Tyr Gly Phe Lys Gly
645 650 655

Glu Gly Ile Ile Thr Leu Thr Asn Ser Ser Ile Leu Ala Gly Val Tyr
660 665 670

Tyr Thr Ser Asp Ser Gly Gln Leu Leu Ala Phe Lys Asn Val Thr Ser
675 680 685

Gly Ala Val Tyr Ser Val Thr Pro Cys Ser Phe Ser Glu Gln Ala Ala
690 695 700

Tyr Val Asn Asp Asp Ile Val Gly Val Ile Ser Ser Leu Ser Asn Ser
705 710 715 720

Thr Phe Asn Asn Thr Arg Glu Leu Pro Gly Phe Phe Tyr His Ser Asn
725 730 735

Asp Gly Ser Asn Cys Thr Glu Pro Val Leu Val Tyr Ser Asn Ile Gly
740 745 750

Val Cys Lys Ser Gly Ser Ile Gly Tyr Val Pro Ser Gln Tyr Gly Gln
755 760 765

Val Lys Ile Ala Pro Thr Val Thr Gly Asn Ile Ser Ile Pro Thr Asn
770 775 780

Phe Ser Met Ser Ile Arg Thr Glu Tyr Leu Gln Leu Tyr Asn Thr Pro
785 790 795 800

Val Ser Val Asp Cys Ala Thr Tyr Val Cys Asn Gly Asn Ser Arg Cys
805 810 815

Lys Gln Leu Leu Thr Gln Tyr Thr Ala Ala Cys Lys Thr Ile Glu Ser
820 825 830

Ala Leu Gln Leu Ser Ala Arg Leu Glu Ser Val Glu Val Asn Ser Met
835 840 845

Leu Thr Ile Ser Glu Glu Ala Leu Gln Leu Ala Thr Ile Ser Ser Phe
850 855 860

Asn Gly Asp Gly Tyr Asn Phe Thr Asn Val Leu Gly Ala Ser Val Tyr
865 870 875 880

Asp Pro Ala Ser Gly Arg Val Val Gln Lys Arg Ser Val Ile Glu Asp
885 890 895

Leu Leu Phe Asn Lys Val Val Thr Asn Gly Leu Gly Thr Val Asp Glu
900 905 910

Asp Tyr Lys Arg Cys Ser Asn Gly Arg Ser Val Ala Asp Leu Val Cys
915 920 925

Ala Gln Tyr Tyr Ser Gly Val Met Val Leu Pro Gly Val Val Asp Ala
930 935 940

Glu Lys Leu His Met Tyr Ser Ala Ser Leu Ile Gly Gly Met Ala Leu
945 950 955 960

Gly Gly Ile Thr Ala Ala Ala Ala Leu Pro Phe Ser Tyr Ala Val Gln
965 970 975

Ala Arg Leu Asn Tyr Leu Ala Leu Gln Thr Asp Val Leu Gln Arg Asn
980 985 990

Gln Gln Leu Leu Ala Glu Ser Phe Asn Ser Ala Ile Gly Asn Ile Thr
995 1000 1005

Ser Ala Phe Glu Ser Val Lys Glu Ala Ile Ser Gln Thr Ser Lys
1010 1015 1020

Gly Leu Asn Thr Val Ala His Ala Leu Thr Lys Val Gln Glu Val
1025 1030 1035

Val Asn Ser Gln Gly Ser Ala Leu Asn Gln Leu Thr Val Gln Leu
1040 1045 1050

Gln His Asn Phe Gln Ala Ile Ser Ser Ser Ile Asp Asp Ile Tyr
1055 1060 1065

Ser Arg Leu Asp Ile Leu Leu Ala Asp Val Gln Val Asp Arg Leu
1070 1075 1080

Ile Thr Gly Arg Leu Ser Ala Leu Asn Ala Phe Val Ala Gln Thr
1085 1090 1095

Leu Thr Lys Tyr Thr Glu Val Gln Ala Ser Arg Lys Leu Ala Gln
1100 1105 1110

Gln Lys Val Asn Glu Cys Val Lys Ser Gln Ser Gln Arg Tyr Gly
1115 1120 1125

Phe Cys Gly Gly Asp Gly Glu His Ile Phe Ser Leu Val Gln Ala
1130 1135 1140

Ala Pro Gln Gly Leu Leu Phe Leu His Thr Val Leu Val Pro Gly
1145 1150 1155

Asp Phe Val Asn Val Leu Ala Ile Ala Gly Leu Cys Val Asn Gly
1160 1165 1170

Glu Ile Ala Leu Thr Leu Arg Glu Pro Gly Leu Val Leu Phe Thr
1175 1180 1185

His Glu Leu Gln Thr Tyr Thr Ala Thr Glu Tyr Phe Val Ser Ser
1190 1195 1200

Arg Arg Met Phe Glu Pro Arg Lys Pro Thr Val Ser Asp Phe Val
1205 1210 1215

Gln Ile Glu Ser Cys Val Val Thr Tyr Val Asn Leu Thr Ser Asp
1220 1225 1230

Gln Leu Pro Asp Val Ile Pro Asp Tyr Ile Asp Val Asn Lys Thr
1235 1240 1245

Leu Asp Glu Ile Leu Ala Ser Leu Pro Asn Arg Thr Gly Pro Ser
1250 1255 1260

Leu Pro Leu Asp Val Phe Asn Ala Thr Tyr Leu Asn Leu Thr Gly
1265 1270 1275

Glu Ile Ala Asp Leu Glu Gln Arg Ser Glu Ser Leu Arg Asn Thr
1280 1285 1290

Thr Glu Glu Leu Arg Ser Leu Ile Asn Asn Ile Asn Asn Thr Leu
1295 1300 1305

Val Asp Leu Glu Trp Leu Asn Arg Val Glu Thr Tyr Ile Lys Trp
1310 1315 1320

Pro Trp Trp Val Trp Leu Ile Ile Val Ile Val Leu Ile Phe Val
1325 1330 1335

Val Ser Leu Leu Val Phe Cys Cys Ile Ser Thr Gly Cys Cys Gly
1340 1345 1350

Cys Cys Gly Cys Cys Gly Ala Cys Phe Ser Gly Cys Cys Arg Gly
1355 1360 1365

Pro Arg Leu Gln Pro Tyr Glu Ala Phe Glu Lys Val His Val Gln
1370 1375 1380

<210> 60
<211> 1349
<212> PRT
<213> porcine hemagglutinating encephalomyelitis virus

<400> 60

Met Phe Phe Ile Leu Leu Ile Ser Leu Pro Ser Ala Phe Ala Val Ile
1 5 10 15

Gly Asp Leu Lys Cys Thr Thr Ser Leu Ile Asn Asp Val Asp Thr Gly
20 25 30

Val Pro Ser Ile Ser Ser Glu Val Val Asp Val Thr Asn Gly Leu Gly
35 40 45

Thr Phe Tyr Val Leu Asp Arg Val Tyr Leu Asn Thr Thr Leu Leu Leu
50 55 60

Asn Gly Tyr Tyr Pro Ile Ser Gly Ala Thr Phe Arg Asn Met Ala Leu
65 70 75 80

Lys Gly Thr Arg Leu Leu Ser Thr Leu Trp Phe Lys Pro Pro Phe Leu
85 90 95

Ser Pro Phe Asn Asp Gly Ile Phe Ala Lys Val Lys Asn Ser Arg Phe
100 105 110

Ser Lys Asp Gly Val Ile Tyr Ser Glu Phe Pro Ala Ile Thr Ile Gly
115 120 125

Ser Thr Phe Val Asn Thr Ser Tyr Ser Ile Val Val Glu Pro His Thr
130 135 140

Ser Leu Ile Asn Gly Asn Leu Gln Gly Leu Leu Gln Ile Ser Val Cys
145 150 155 160

Gln Tyr Thr Met Cys Glu Tyr Pro His Thr Ile Cys His Pro Asn Leu
165 170 175

Gly Asn Gln Arg Ile Glu Leu Trp His Tyr Asp Thr Asp Val Val Ser
180 185 190

Cys Leu Tyr Arg Arg Asn Phe Thr Tyr Asp Val Asn Ala Asp Tyr Leu
195 200 205

Tyr Phe His Phe Tyr Gln Glu Gly Gly Thr Phe Tyr Ala Tyr Phe Thr
210 215 220

Asp Thr Gly Phe Val Thr Lys Phe Leu Phe Lys Leu Tyr Leu Gly Thr
225 230 235 240

Val Leu Ser His Tyr Tyr Val Met Pro Leu Thr Cys Asn Ser Ala Leu
245 250 255

Ser Leu Glu Tyr Trp Val Thr Pro Leu Thr Thr Arg Gln Phe Leu Leu
260 265 270

Ala Phe Asp Gln Asp Gly Val Leu Tyr His Ala Val Asp Cys Ala Ser
275 280 285

Asp Phe Met Ser Glu Ile Met Cys Lys Thr Ser Ser Ile Thr Pro Pro
290 295 300

Thr Gly Val Tyr Glu Leu Asn Gly Tyr Thr Val Gln Pro Val Ala Thr
305 310 315 320

Val Tyr Arg Arg Ile Pro Asp Leu Pro Asn Cys Asp Ile Glu Ala Trp
325 330 335

Leu Asn Ser Lys Thr Val Ser Ser Pro Leu Asn Trp Glu Arg Lys Ile
340 345 350

Phe Ser Asn Cys Asn Phe Asn Met Gly Arg Leu Met Ser Phe Ile Gln
355 360 365

Ala Asp Ser Phe Gly Cys Asn Asn Ile Asp Ala Ser Arg Leu Tyr Gly
370 375 380

Met Cys Phe Gly Ser Ile Thr Ile Asp Lys Phe Ala Ile Pro Asn Ser
385 390 395 400

Arg Lys Val Asp Leu Gln Val Gly Lys Ser Gly Tyr Leu Gln Ser Phe
405 410 415

Asn Tyr Lys Ile Asp Thr Ala Val Ser Ser Cys Gln Leu Tyr Tyr Ser
420 425 430

Leu Pro Ala Ala Asn Val Ser Val Thr His Tyr Asn Pro Ser Ser Trp
435 440 445

Asn Arg Arg Tyr Gly Phe Asn Asn Gln Ser Phe Gly Ser Arg Gly Leu
450 455 460

His Asp Ala Val Tyr Ser Gln Gln Cys Phe Asn Thr Pro Asn Thr Tyr
465 470 475 480

Cys Pro Cys Arg Thr Ser Gln Cys Ile Gly Gly Ala Gly Thr Gly Thr
485 490 495

Cys Pro Val Gly Thr Thr Val Arg Lys Cys Phe Ala Ala Val Thr Lys
500 505 510

Ala Thr Lys Cys Thr Cys Trp Cys Gln Pro Asp Pro Ser Thr Tyr Lys
515 520 525

Gly Val Asn Ala Trp Thr Cys Pro Gln Ser Lys Val Ser Ile Gln Pro
530 535 540

Gly Gln His Cys Pro Gly Leu Gly Leu Val Glu Asp Asp Cys Ser Gly
545 550 555 560

Asn Pro Cys Thr Cys Lys Pro Gln Ala Phe Ile Gly Trp Ser Ser Glu
565 570 575

Thr Cys Leu Gln Asn Gly Arg Cys Asn Ile Phe Ala Asn Phe Ile Leu
580 585 590

Asn Asp Val Asn Ser Gly Thr Thr Cys Ser Thr Asp Leu Gln Gln Gly
595 600 605

Asn Thr Ile Ile Thr Thr Asp Val Cys Val Asn Tyr Asp Leu Tyr Gly
610 615 620

Ile Thr Gly Gln Gly Ile Leu Ile Glu Val Asn Ala Thr Tyr Tyr Asn
625 630 635 640

Ser Trp Gln Asn Leu Leu Tyr Asp Ser Ser Gly Asn Leu Tyr Gly Phe
645 650 655

Arg Asp Tyr Leu Ser Asn Arg Thr Phe Leu Ile Arg Ser Cys Tyr Ser
660 665 670

Gly Arg Val Ser Ala Val Phe His Ala Asn Ser Ser Glu Pro Ala Leu
675 680 685

Met Phe Arg Asn Leu Lys Cys Ser His Val Phe Asn Asn Thr Ile Leu
690 695 700

Arg Gln Ile Gln Leu Val Asn Tyr Phe Asp Ser Tyr Leu Gly Cys Val
705 710 715 720

Val Asn Ala Tyr Asn Asn Thr Ala Ser Ala Val Ser Thr Cys Asp Leu
725 730 735

Thr Val Gly Ser Gly Tyr Cys Val Asp Tyr Val Thr Ala Leu Arg Ser
740 745 750

Arg Arg Ser Phe Thr Thr Gly Tyr Arg Phe Thr Asn Phe Glu Pro Phe

755 760 765

Ala Ala Asn Leu Val Asn Asp Ser Ile Glu Pro Val Gly Gly Leu Tyr
770 775 780

Glu Ile Gln Ile Pro Ser Glu Phe Thr Ile Gly Asn Leu Glu Glu Phe
785 790 795 800

Ile Gln Thr Arg Ser Pro Lys Val Thr Ile Asp Cys Ala Thr Phe Val
805 810 815

Cys Gly Asp Tyr Ala Ala Cys Arg Gln Gln Leu Ala Glu Tyr Gly Ser
820 825 830

Phe Cys Glu Asn Ile Asn Ala Ile Leu Thr Glu Val Asn Glu Leu Leu
835 840 845

Asp Thr Thr Gln Leu Gln Val Ala Asn Ser Leu Met Asn Gly Val Thr
850 855 860

Leu Ser Thr Lys Ile Lys Asp Gly Ile Asn Phe Asn Val Asp Asp Ile
865 870 875 880

Asn Phe Ser Pro Val Leu Gly Cys Leu Gly Ser Glu Cys Asn Arg Ala
885 890 895

Ser Thr Arg Ser Ala Ile Glu Asp Leu Leu Phe Asp Lys Val Lys Leu
900 905 910

Ser Asp Val Gly Phe Val Gln Ala Tyr Asn Asn Cys Thr Gly Gly Ala
915 920 925

Glu Ile Arg Asp Leu Ile Cys Val Gln Ser Tyr Asn Gly Ile Lys Val
930 935 940

Leu Pro Pro Leu Leu Ser Glu Asn Gln Ile Ser Gly Tyr Thr Leu Ala
945 950 955 960

Ala Thr Ala Ala Ser Leu Phe Pro Pro Trp Thr Ala Ala Ala Gly Val
965 970 975

Pro Phe Tyr Leu Asn Val Gln Tyr Arg Ile Asn Gly Leu Gly Val Thr
980 985 990

Met Asp Val Leu Ser Gln Asn Gln Lys Leu Ile Ala Ser Ala Phe Asn
995 1000 1005

Asn Ala Leu Asp Ala Ile Gln Glu Gly Phe Asp Ala Thr Asn Ser
1010 1015 1020

Ala Leu Val Lys Ile Gln Ala Val Val Asn Ala Asn Ala Glu Ala
1025 1030 1035

Leu Asn Asn Leu Leu Gln Gln Leu Ser Asn Arg Phe Gly Ala Ile
1040 1045 1050

Ser Ala Ser Leu Gln Glu Ile Leu Ser Arg Leu Asp Ala Leu Glu
1055 1060 1065

Ala Lys Ala Gln Ile Asp Arg Leu Ile Asn Gly Arg Leu Thr Ala
1070 1075 1080

Leu Asn Ala Tyr Val Ser Gln Gln Leu Ser Asp Ser Thr Leu Val
1085 1090 1095

Lys Phe Ser Ala Ala Gln Ala Ile Glu Lys Val Asn Glu Cys Val
1100 1105 1110

Lys Ser Gln Ser Ser Arg Ile Asn Phe Cys Gly Asn Gly Asn His
1115 1120 1125

Ile Ile Ser Leu Val Gln Asn Ala Pro Tyr Gly Leu Tyr Phe Ile
1130 1135 1140

His Phe Ser Tyr Val Pro Thr Lys Tyr Val Thr Ala Lys Val Ser
1145 1150 1155

Pro Gly Leu Cys Ile Ala Gly Asp Ile Gly Ile Ser Pro Lys Ser
1160 1165 1170

Gly Tyr Phe Ile Asn Val Asn Asn Ser Trp Met Phe Thr Gly Ser
1175 1180 1185

Ser Tyr Tyr Tyr Pro Glu Pro Ile Thr Gln Asn Asn Val Val Val
1190 1195 1200

Met Ser Thr Cys Ala Val Asn Tyr Thr Lys Ala Pro Asp Leu Met
1205 1210 1215

Leu Asn Thr Ser Thr Pro Asn Leu Pro Asp Phe Lys Glu Glu Leu
1220 1225 1230

Tyr Gln Trp Phe Lys Asn Gln Ser Ser Val Ala Pro Asp Leu Ser
1235 1240 1245

Leu Asp Tyr Ile Asn Val Thr Phe Leu Asp Leu Gln Asp Glu Met
1250 1255 1260

Asn Arg Leu Gln Glu Ala Ile Lys Val Leu Asn Gln Ser Tyr Ile
1265 1270 1275

Asn Leu Lys Asp Ile Gly Thr Tyr Glu Tyr Tyr Val Lys Trp Pro
1280 1285 1290

Trp Tyr Val Trp Leu Leu Ile Gly Leu Ala Gly Val Ala Met Leu
1295 1300 1305

Val Leu Leu Phe Phe Ile Cys Cys Cys Thr Gly Cys Gly Thr Ser
1310 1315 1320

Cys Phe Lys Lys Cys Gly Gly Cys Cys Asp Asp Tyr Thr Gly His
1325 1330 1335

Gln Glu Phe Val Ile Lys Thr Ser His Asp Asp
1340 1345

<210> 61
<211> 1225
<212> PRT
<213> Porcine respiratory coronavirus

<400> 61

Met Lys Lys Leu Phe Val Val Leu Val Val Met Pro Leu Ile Tyr Gly
1 5 10 15

Asp Lys Phe Pro Thr Ser Val Val Ser Asn Cys Thr Asp Gln Cys Ala
20 25 30

Ser Tyr Val Ala Asn Val Phe Thr Thr Gln Pro Gly Gly Phe Ile Pro
35 40 45

Ser Asp Phe Ser Phe Asn Asn Trp Phe Leu Leu Thr Asn Ser Ser Thr
50 55 60

Leu Val Ser Gly Lys Leu Val Thr Lys Gln Pro Leu Leu Val Asn Cys
65 70 75 80

Leu Trp Pro Val Pro Ser Phe Glu Glu Ala Ala Ser Thr Phe Cys Phe

85 90 95

Glu Gly Ala Asp Phe Asp Gln Cys Asn Gly Ala Val Leu Asn Asn Thr
100 105 110

Val Asp Val Ile Arg Phe Asn Leu Asn Phe Thr Thr Asn Val Gln Ser
115 120 125

Gly Lys Gly Ala Thr Val Phe Ser Leu Asn Thr Thr Gly Gly Val Thr
130 135 140

Leu Glu Ile Ser Cys Tyr Asn Asp Thr Val Ser Asp Ser Ser Phe Ser
145 150 155 160

Ser Tyr Gly Glu Ile Pro Phe Gly Val Thr Asn Gly Pro Arg Tyr Cys
165 170 175

Tyr Val Leu Tyr Asn Gly Thr Ala Leu Lys Tyr Leu Gly Thr Leu Pro
180 185 190

Pro Ser Val Lys Glu Ile Ala Ile Ser Lys Trp Gly His Phe Tyr Ile
195 200 205

Asn Gly Tyr Asn Phe Phe Ser Thr Phe Pro Ile Asp Cys Ile Ser Phe
210 215 220

Asn Leu Thr Thr Gly Asp Ser Asp Val Phe Trp Thr Ile Ala Tyr Thr
225 230 235 240

Ser Tyr Thr Glu Ala Leu Val Gln Val Glu Asn Thr Ala Ile Thr Asn
245 250 255

Val Thr Tyr Cys Asn Ser Tyr Val Asn Asn Ile Lys Cys Ser Gln Leu
260 265 270

Thr Ala Asn Leu Asn Asn Gly Phe Tyr Pro Val Ser Ser Ser Glu Val
275 280 285

Gly Ser Val Asn Lys Ser Val Val Leu Leu Pro Ser Phe Leu Thr His
290 295 300

Thr Ile Val Asn Ile Thr Ile Gly Leu Gly Met Lys Arg Ser Gly Tyr
305 310 315 320

Gly Gln Pro Ile Ala Ser Thr Leu Ser Asn Ile Thr Leu Pro Met Gln
325 330 335

Asp Asn Asn Thr Asp Val Tyr Cys Val Arg Ser Asp Gln Phe Ser Val
340 345 350

Tyr Val His Ser Thr Cys Lys Ser Ala Leu Trp Asp Asn Val Phe Lys
355 360 365

Arg Asn Cys Thr Asp Val Leu Asp Ala Thr Ala Val Ile Lys Thr Gly
370 375 380

Thr Cys Pro Phe Ser Phe Asp Lys Leu Asn Asn Tyr Leu Thr Phe Asn
385 390 395 400

Lys Phe Cys Leu Ser Leu Ser Pro Val Gly Ala Asn Cys Lys Phe Asp
405 410 415

Val Ala Ala Arg Thr Arg Thr Asn Glu Gln Val Val Arg Ser Leu Tyr
420 425 430

Val Ile Tyr Glu Glu Gly Asp Ser Ile Val Gly Val Pro Ser Asp Asn
435 440 445

Ser Gly Leu His Asp Leu Ser Val Leu His Leu Asp Ser Cys Thr Asp
450 455 460

Tyr Asn Ile Tyr Gly Arg Thr Gly Val Gly Ile Ile Arg Gln Thr Asn
465 470 475 480

Arg Thr Leu Leu Ser Gly Leu Tyr Tyr Thr Ser Leu Ser Gly Asp Leu
485 490 495

Leu Gly Phe Lys Asn Val Ser Asp Gly Val Ile Tyr Ser Val Thr Pro
500 505 510

Cys Asp Val Ser Ala Gln Ala Ala Val Ile Asp Gly Thr Ile Val Gly
515 520 525

Ala Ile Thr Ser Ile Asn Ser Glu Leu Leu Gly Leu Thr His Trp Thr
530 535 540

Ile Thr Pro Asn Phe Tyr Tyr Tyr Ser Ile Tyr Asn Tyr Thr Asn Asp
545 550 555 560

Lys Thr Arg Gly Thr Pro Ile Asp Ser Asn Asp Val Gly Cys Glu Pro
565 570 575

Val Ile Thr Tyr Ser Asn Ile Gly Val Cys Lys Asn Gly Ala Leu Val
580 585 590

Phe Ile Asn Val Thr His Ser Asp Gly Asp Val Gln Pro Ile Ser Thr
595 600 605

Gly Asn Val Thr Ile Pro Thr Asn Phe Thr Ile Ser Val Gln Val Glu
610 615 620

Tyr Ile Gln Val Tyr Thr Thr Pro Val Ser Ile Asp Cys Ser Arg Tyr
625 630 635 640

Val Cys Asn Gly Asn Pro Arg Cys Asn Lys Leu Leu Thr Gln Tyr Val
645 650 655

Ser Ala Cys Gln Thr Ile Glu Gln Ala Leu Ala Met Gly Ala Arg Leu
660 665 670

Glu Asn Met Glu Val Asp Ser Met Leu Phe Val Ser Glu Asn Ala Leu
675 680 685

Lys Leu Ala Ser Val Glu Ala Phe Asn Ser Ser Glu Thr Leu Asp Pro
690 695 700

Ile Tyr Thr Gln Trp Pro Asn Ile Gly Gly Phe Trp Leu Glu Gly Leu
705 710 715 720

Lys Tyr Ile Leu Pro Ser Asp Asn Ser Lys Arg Lys Tyr Arg Ser Ala
725 730 735

Ile Glu Asp Leu Leu Phe Ser Lys Val Val Thr Ser Gly Leu Gly Thr
740 745 750

Val Asp Glu Asp Tyr Lys Arg Cys Thr Gly Gly Tyr Asp Ile Ala Asp
755 760 765

Leu Val Cys Ala Gln Tyr Tyr Asn Gly Ile Met Val Leu Pro Gly Val
770 775 780

Ala Asn Ala Asp Lys Met Thr Met Tyr Thr Ala Ser Leu Ala Gly Gly
785 790 795 800

Ile Thr Leu Gly Ala Phe Gly Gly Gly Ala Val Ser Ile Pro Phe Ala
805 810 815

Val Ala Val Gln Ala Arg Leu Asn Tyr Val Ala Leu Gln Thr Asp Val
820 825 830

Leu Asn Lys Asn Gln Gln Ile Leu Ala Ser Ala Phe Asn Gln Ala Ile
835 840 845

Gly Asn Ile Thr Gln Ser Phe Gly Lys Val Asn Asp Ala Ile His Gln
850 855 860

Thr Ser Arg Gly Leu Thr Thr Val Ala Lys Ala Leu Ala Lys Val Gln
865 870 875 880

Asp Val Val Asn Thr Gln Gly Gln Ala Leu Arg His Leu Thr Val Gln
885 890 895

Leu Gln Asn Asn Phe Gln Ala Ile Ser Ser Ser Ile Ser Asp Ile Tyr
900 905 910

Asn Arg Leu Asp Glu Leu Ser Ala Asp Ala Gln Val Asp Arg Leu Ile
915 920 925

Thr Gly Arg Leu Thr Ala Leu Asn Ala Phe Val Ser Gln Thr Leu Thr
930 935 940

Arg Gln Ala Glu Val Arg Ala Ser Arg Gln Leu Ala Lys Asp Lys Val
945 950 955 960

Asn Glu Cys Val Arg Ser Gln Ser Gln Arg Phe Gly Phe Cys Gly Asn
965 970 975

Gly Thr His Leu Phe Ser Leu Ala Asn Ala Ala Pro Asn Gly Met Ile
980 985 990

Phe Phe His Thr Val Leu Leu Pro Thr Ala Tyr Glu Thr Val Thr Ala
995 1000 1005

Trp Ser Gly Ile Cys Ala Leu Asp Gly Asp Arg Thr Phe Gly Leu
1010 1015 1020

Val Val Lys Asp Val Gln Leu Thr Leu Phe Arg Asn Leu Asp Asp
1025 1030 1035

Lys Phe Tyr Leu Thr Pro Arg Thr Met Tyr Gln Pro Arg Val Ala
1040 1045 1050

Thr Ser Ser Asp Phe Val Gln Ile Glu Gly Cys Asp Val Leu Phe

1055 1060 1065

Val Asn Thr Thr Val Ser Asp Leu Pro Ser Ile Ile Pro Asp Tyr
1070 1075 1080

Ile Asp Ile Asn Gln Thr Val Gln Asp Ile Leu Glu Asn Phe Arg
1085 1090 1095

Pro Asn Trp Thr Val Pro Glu Leu Thr Leu Asp Val Phe Asn Ala
1100 1105 1110

Thr Tyr Leu Asn Leu Thr Gly Glu Ile Asp Asp Leu Glu Phe Arg
1115 1120 1125

Ser Glu Lys Leu His Asn Thr Thr Val Glu Leu Ala Ile Leu Ile
1130 1135 1140

Asp Asn Ile Asn Asn Thr Leu Val Asn Leu Glu Trp Leu Asn Arg
1145 1150 1155

Ile Glu Thr Tyr Val Lys Trp Pro Trp Tyr Val Trp Leu Leu Ile
1160 1165 1170

Gly Leu Val Val Ile Phe Cys Ile Pro Leu Leu Leu Phe Cys Cys
1175 1180 1185

Cys Ser Thr Gly Cys Cys Gly Cys Ile Gly Cys Leu Gly Ser Cys
1190 1195 1200

Cys His Ser Ile Phe Ser Arg Arg Gln Phe Glu Asn Tyr Glu Pro
1205 1210 1215

Ile Glu Lys Val His Val His
1220 1225

<210> 62
<211> 82
<212> PRT
<213> Porcine transmissible gastroenteritis coronoavirus

<400> 62

Met Thr Phe Pro Arg Ala Leu Thr Val Ile Asp Asp Asn Gly Met Val
1 5 10 15

Ile Asn Ile Ile Phe Trp Phe Leu Leu Ile Ile Ile Leu Ile Leu Leu
20 25 30

Ser Ile Ala Leu Leu Asn Ile Ile Lys Leu Cys Met Val Cys Cys Asn
35 40 45

Leu Gly Arg Thr Val Ile Ile Val Pro Ala Gln His Ala Tyr Asp Ala
50 55 60

Tyr Lys Asn Phe Met Arg Ile Lys Ala Tyr Asn Pro Asp Gly Ala Leu
65 70 75 80

Leu Ala

<210> 63
<211> 4376
<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 63

Met Glu Ser Leu Val Leu Gly Val Asn Glu Lys Thr His Val Gln Leu
1 5 10 15

Ser Leu Pro Val Leu Gln Val Arg Asp Val Leu Val Arg Gly Phe Gly
20 25 30

Asp Ser Val Glu Glu Ala Leu Ser Glu Ala Arg Glu His Leu Lys Asn
35 40 45

Gly Thr Cys Gly Leu Val Glu Leu Glu Lys Gly Val Leu Pro Gln Leu
50 55 60

Glu Gln Pro Tyr Val Phe Ile Lys Arg Ser Asp Ala Leu Ser Thr Asn
65 70 75 80

His Gly His Lys Val Val Glu Leu Val Ala Glu Met Asp Gly Ile Gln
85 90 95

Tyr Gly Arg Ser Gly Ile Thr Leu Gly Val Leu Val Pro His Val Gly
100 105 110

Glu Thr Pro Ile Ala Tyr Arg Asn Val Leu Leu Arg Lys Asn Gly Asn
115 120 125

Lys Gly Ala Gly Gly His Ser Tyr Gly Ile Asp Leu Lys Ser Tyr Asp
130 135 140

Leu Gly Asp Glu Leu Gly Thr Asp Pro Ile Glu Asp Tyr Glu Gln Asn

145 150 155 160

Trp Asn Thr Lys His Gly Ser Gly Ala Leu Arg Glu Leu Thr Arg Glu
165 170 175

Leu Asn Gly Gly Ala Val Thr Arg Tyr Val Asp Asn Asn Phe Cys Gly
180 185 190

Pro Asp Gly Tyr Pro Leu Asp Cys Ile Lys Asp Phe Leu Ala Arg Ala
195 200 205

Gly Lys Ser Met Cys Thr Leu Ser Glu Gln Leu Asp Tyr Ile Glu Ser
210 215 220

Lys Arg Gly Val Tyr Cys Cys Arg Asp His Glu His Glu Ile Ala Trp
225 230 235 240

Phe Thr Glu Arg Ser Asp Lys Ser Tyr Glu His Gln Thr Pro Phe Glu
245 250 255

Ile Lys Ser Ala Lys Lys Phe Asp Thr Phe Lys Gly Glu Cys Pro Lys
260 265 270

Phe Val Phe Pro Leu Asn Ser Lys Val Lys Val Ile Gln Pro Arg Val
275 280 285

Glu Lys Lys Lys Thr Glu Gly Phe Met Gly Arg Ile Arg Ser Val Tyr
290 295 300

Pro Val Ala Ser Pro Gln Glu Cys Asn Asn Met His Leu Ser Thr Leu
305 310 315 320

Met Lys Cys Asn His Cys Asp Glu Val Ser Trp Gln Thr Cys Asp Phe
325 330 335

Leu Lys Ala Thr Cys Glu His Cys Gly Thr Glu Asn Leu Val Ile Glu
340 345 350

Gly Pro Thr Thr Cys Gly Tyr Leu Pro Thr Asn Ala Val Val Lys Met
355 360 365

Pro Cys Pro Ala Cys Gln Asp Pro Glu Ile Gly Pro Glu His Ser Val
370 375 380

Ala Asp Tyr His Asn His Ser Asn Ile Glu Thr Arg Leu Arg Lys Gly
385 390 395 400

Gly Arg Thr Arg Cys Phe Gly Gly Cys Val Phe Ala Tyr Val Gly Cys
405 410 415

Tyr Asn Lys Arg Ala Tyr Trp Val Pro Arg Ala Ser Ala Asp Ile Gly
420 425 430

Ser Gly His Thr Gly Ile Thr Gly Asp Asn Val Glu Thr Leu Asn Glu
435 440 445

Asp Leu Leu Glu Ile Leu Ser Arg Glu Arg Val Asn Ile Asn Ile Val
450 455 460

Gly Asp Phe His Leu Asn Glu Glu Val Ala Ile Ile Leu Ala Ser Phe
465 470 475 480

Ser Ala Ser Thr Ser Ala Phe Ile Asp Thr Ile Lys Ser Leu Asp Tyr
485 490 495

Lys Ser Phe Lys Thr Ile Val Glu Ser Cys Gly Asn Tyr Lys Val Thr
500 505 510

Lys Gly Lys Pro Val Lys Gly Ala Trp Asn Ile Gly Gln Gln Arg Ser
515 520 525

Val Leu Thr Pro Leu Cys Gly Phe Pro Ser Gln Ala Ala Gly Val Ile
530 535 540

Arg Ser Ile Phe Ala Arg Thr Leu Asp Ala Ala Asn His Ser Ile Pro
545 550 555 560

Asp Leu Gln Arg Ala Ala Val Thr Ile Leu Asp Gly Ile Ser Glu Gln
565 570 575

Ser Leu Arg Leu Val Asp Ala Met Val Tyr Thr Ser Asp Leu Leu Thr
580 585 590

Asn Ser Val Ile Ile Met Ala Tyr Val Thr Gly Gly Leu Val Gln Gln
595 600 605

Thr Ser Gln Trp Leu Ser Asn Leu Leu Gly Thr Thr Val Glu Lys Leu
610 615 620

Arg Pro Ile Phe Glu Trp Ile Glu Ala Lys Leu Ser Ala Gly Val Glu
625 630 635 640

Phe Leu Lys Asp Ala Trp Glu Ile Leu Lys Phe Leu Ile Thr Gly Val
645 650 655

Phe Asp Ile Val Lys Gly Gln Ile Gln Val Ala Ser Asp Asn Ile Lys
660 665 670

Asp Cys Val Lys Cys Phe Ile Asp Val Val Asn Lys Ala Leu Glu Met
675 680 685

Cys Ile Asp Gln Val Thr Ile Ala Gly Ala Lys Leu Arg Ser Leu Asn
690 695 700

Leu Gly Glu Val Phe Ile Ala Gln Ser Lys Gly Leu Tyr Arg Gln Cys
705 710 715 720

Ile Arg Gly Lys Glu Gln Leu Gln Leu Leu Met Pro Leu Lys Ala Pro
725 730 735

Lys Glu Val Thr Phe Leu Glu Gly Asp Ser His Asp Thr Val Leu Thr
740 745 750

Ser Glu Glu Val Val Leu Lys Asn Gly Glu Leu Glu Ala Leu Glu Thr
755 760 765

Pro Val Asp Ser Phe Thr Asn Gly Ala Ile Val Gly Thr Pro Val Cys
770 775 780

Val Asn Gly Leu Met Leu Leu Glu Ile Lys Asp Lys Glu Gln Tyr Cys
785 790 795 800

Ala Leu Ser Pro Gly Leu Leu Ala Thr Asn Asn Val Phe Arg Leu Lys
805 810 815

Gly Gly Ala Pro Ile Lys Gly Val Thr Phe Gly Glu Asp Thr Val Trp
820 825 830

Glu Val Gln Gly Tyr Lys Asn Val Arg Ile Thr Phe Glu Leu Asp Glu
835 840 845

Arg Val Asp Lys Val Leu Asn Glu Lys Cys Ser Val Tyr Thr Val Glu
850 855 860

Ser Gly Thr Glu Val Thr Glu Phe Ala Cys Val Val Ala Glu Ala Val
865 870 875 880

Val Lys Thr Leu Gln Pro Val Ser Asp Leu Leu Thr Asn Met Gly Ile
885 890 895

Asp Leu Asp Glu Trp Ser Val Ala Thr Phe Tyr Leu Phe Asp Asp Ala
900 905 910

Gly Glu Glu Asn Phe Ser Ser Arg Met Tyr Cys Ser Phe Tyr Pro Pro
915 920 925

Asp Glu Glu Glu Glu Asp Asp Ala Glu Cys Glu Glu Glu Glu Ile Asp
930 935 940

Glu Thr Cys Glu His Glu Tyr Gly Thr Glu Asp Asp Tyr Gln Gly Leu
945 950 955 960

Pro Leu Glu Phe Gly Ala Ser Ala Glu Thr Val Arg Val Glu Glu Glu
965 970 975

Glu Glu Glu Asp Trp Leu Asp Asp Thr Thr Glu Gln Ser Glu Ile Glu
980 985 990

Pro Glu Pro Glu Pro Thr Pro Glu Glu Pro Val Asn Gln Phe Thr Gly
995 1000 1005

Tyr Leu Lys Leu Thr Asp Asn Val Ala Ile Lys Cys Val Asp Ile
1010 1015 1020

Val Lys Glu Ala Gln Ser Ala Asn Pro Met Val Ile Val Asn Ala
1025 1030 1035

Ala Asn Ile His Leu Lys His Gly Gly Gly Val Ala Gly Ala Leu
1040 1045 1050

Asn Lys Ala Thr Asn Gly Ala Met Gln Lys Glu Ser Asp Asp Tyr
1055 1060 1065

Ile Lys Leu Asn Gly Pro Leu Thr Val Gly Gly Ser Cys Leu Leu
1070 1075 1080

Ser Gly His Asn Leu Ala Lys Lys Cys Leu His Val Val Gly Pro
1085 1090 1095

Asn Leu Asn Ala Gly Glu Asp Ile Gln Leu Leu Lys Ala Ala Tyr
1100 1105 1110

Glu Asn Phe Asn Ser Gln Asp Ile Leu Leu Ala Pro Leu Leu Ser

1115 1120 1125

Ala Gly Ile Phe Gly Ala Lys Pro Leu Gln Ser Leu Gln Val Cys
1130 1135 1140

Val Gln Thr Val Arg Thr Gln Val Tyr Ile Ala Val Asn Asp Lys
1145 1150 1155

Ala Leu Tyr Glu Gln Val Val Met Asp Tyr Leu Asp Asn Leu Lys
1160 1165 1170

Pro Arg Val Glu Ala Pro Lys Gln Glu Glu Pro Pro Asn Thr Glu
1175 1180 1185

Asp Ser Lys Thr Glu Glu Lys Ser Val Val Gln Lys Pro Val Asp
1190 1195 1200

Val Lys Pro Lys Ile Lys Ala Cys Ile Asp Glu Val Thr Thr Thr
1205 1210 1215

Leu Glu Glu Thr Lys Phe Leu Thr Asn Lys Leu Leu Leu Phe Ala
1220 1225 1230

Asp Ile Asn Gly Lys Leu Tyr His Asp Ser Gln Asn Met Leu Arg
1235 1240 1245

Gly Glu Asp Met Ser Phe Leu Glu Lys Asp Ala Pro Tyr Met Val
1250 1255 1260

Gly Asp Val Ile Thr Ser Gly Asp Ile Thr Cys Val Val Ile Pro
1265 1270 1275

Ser Lys Lys Ala Gly Gly Thr Thr Glu Met Leu Ser Arg Ala Leu
1280 1285 1290

Lys Lys Val Pro Val Asp Glu Tyr Ile Thr Thr Tyr Pro Gly Gln
1295 1300 1305

Gly Cys Ala Gly Tyr Thr Leu Glu Glu Ala Lys Thr Ala Leu Lys
1310 1315 1320

Lys Cys Lys Ser Ala Phe Tyr Val Leu Pro Ser Glu Ala Pro Asn
1325 1330 1335

Ala Lys Glu Glu Ile Leu Gly Thr Val Ser Trp Asn Leu Arg Glu
1340 1345 1350

Met Leu Ala His Ala Glu Glu Thr Arg Lys Leu Met Pro Ile Cys
1355 1360 1365

Met Asp Val Arg Ala Ile Met Ala Thr Ile Gln Arg Lys Tyr Lys
1370 1375 1380

Gly Ile Lys Ile Gln Glu Gly Ile Val Asp Tyr Gly Val Arg Phe
1385 1390 1395

Phe Phe Tyr Thr Ser Lys Glu Pro Val Ala Ser Ile Ile Thr Lys
1400 1405 1410

Leu Asn Ser Leu Asn Glu Pro Leu Val Thr Met Pro Ile Gly Tyr
1415 1420 1425

Val Thr His Gly Phe Asn Leu Glu Glu Ala Ala Arg Cys Met Arg
1430 1435 1440

Ser Leu Lys Ala Pro Ala Val Val Ser Val Ser Ser Pro Asp Ala
1445 1450 1455

Val Thr Thr Tyr Asn Gly Tyr Leu Thr Ser Ser Ser Lys Thr Ser
1460 1465 1470

Glu Glu His Phe Val Glu Thr Val Ser Leu Ala Gly Ser Tyr Arg
1475 1480 1485

Asp Trp Ser Tyr Ser Gly Gln Arg Thr Glu Leu Gly Val Glu Phe
1490 1495 1500

Leu Lys Arg Gly Asp Lys Ile Val Tyr His Thr Leu Glu Ser Pro
1505 1510 1515

Val Glu Phe His Leu Asp Gly Glu Val Leu Ser Leu Asp Lys Leu
1520 1525 1530

Lys Ser Leu Leu Ser Leu Arg Glu Val Lys Thr Ile Lys Val Phe
1535 1540 1545

Thr Thr Val Asp Asn Thr Asn Leu His Thr Gln Leu Val Asp Met
1550 1555 1560

Ser Met Thr Tyr Gly Gln Gln Phe Gly Pro Thr Tyr Leu Asp Gly
1565 1570 1575

Ala Asp Val Thr Lys Ile Lys Pro His Val Asn His Glu Gly Lys
1580 1585 1590

Thr Phe Phe Val Leu Pro Ser Asp Asp Thr Leu Arg Ser Glu Ala
1595 1600 1605

Phe Glu Tyr Tyr His Thr Leu Asp Glu Ser Phe Leu Gly Arg Tyr
1610 1615 1620

Met Ser Ala Leu Asn His Thr Lys Lys Trp Lys Phe Pro Gln Val
1625 1630 1635

Gly Gly Leu Thr Ser Ile Lys Trp Ala Asp Asn Asn Cys Tyr Leu
1640 1645 1650

Ser Ser Val Leu Leu Ala Leu Gln Gln Leu Glu Val Lys Phe Asn
1655 1660 1665

Ala Pro Ala Leu Gln Glu Ala Tyr Tyr Arg Ala Arg Ala Gly Asp
1670 1675 1680

Ala Ala Asn Phe Cys Ala Leu Ile Leu Ala Tyr Ser Asn Lys Thr
1685 1690 1695

Val Gly Glu Leu Gly Asp Val Arg Glu Thr Met Thr His Leu Leu
1700 1705 1710

Gln His Ala Asn Leu Glu Ser Ala Lys Arg Val Leu Asn Val Val
1715 1720 1725

Cys Lys His Cys Gly Gln Lys Thr Thr Thr Leu Thr Gly Val Glu
1730 1735 1740

Ala Val Met Tyr Met Gly Thr Leu Ser Tyr Asp Asn Leu Lys Thr
1745 1750 1755

Gly Val Ser Ile Pro Cys Val Cys Gly Arg Asp Ala Thr Gln Tyr
1760 1765 1770

Leu Val Gln Gln Glu Ser Ser Phe Val Met Met Ser Ala Pro Pro
1775 1780 1785

Ala Glu Tyr Lys Leu Gln Gln Gly Thr Phe Leu Cys Ala Asn Glu
1790 1795 1800

Tyr Thr Gly Asn Tyr Gln Cys Gly His Tyr Thr His Ile Thr Ala
1805 1810 1815

Lys Glu Thr Leu Tyr Arg Ile Asp Gly Ala His Leu Thr Lys Met
1820 1825 1830

Ser Glu Tyr Lys Gly Pro Val Thr Asp Val Phe Tyr Lys Glu Thr
1835 1840 1845

Ser Tyr Thr Thr Thr Ile Lys Pro Val Ser Tyr Lys Leu Asp Gly
1850 1855 1860

Val Thr Tyr Thr Glu Ile Glu Pro Lys Leu Asp Gly Tyr Tyr Lys
1865 1870 1875

Lys Asp Asn Ala Tyr Tyr Thr Glu Gln Pro Ile Asp Leu Val Pro
1880 1885 1890

Thr Gln Pro Leu Pro Asn Ala Ser Phe Asp Asn Phe Lys Leu Thr
1895 1900 1905

Cys Ser Asn Thr Lys Phe Ala Asp Asp Leu Asn Gln Met Thr Gly
1910 1915 1920

Phe Thr Lys Pro Ala Ser Arg Glu Leu Ser Val Thr Phe Phe Pro
1925 1930 1935

Asp Leu Asn Gly Asp Val Val Ala Ile Asp Tyr Arg His Tyr Ser
1940 1945 1950

Ala Ser Phe Lys Lys Gly Ala Lys Leu Leu His Lys Pro Ile Val
1955 1960 1965

Trp His Ile Asn Gln Ala Thr Thr Lys Thr Thr Phe Lys Pro Asn
1970 1975 1980

Thr Trp Cys Leu Arg Cys Leu Trp Ser Thr Lys Pro Val Asp Thr
1985 1990 1995

Ser Asn Ser Phe Glu Val Leu Ala Val Glu Asp Thr Gln Gly Met
2000 2005 2010

Asp Asn Leu Ala Cys Glu Ser Gln Gln Pro Thr Ser Glu Glu Val
2015 2020 2025

Val Glu Asn Pro Thr Ile Gln Lys Glu Val Ile Glu Cys Asp Val

2030 2035 2040

Lys Thr Thr Glu Val Val Gly Asn Val Ile Leu Lys Pro Ser Asp
2045 2050 2055

Glu Gly Val Lys Val Thr Gln Glu Leu Gly His Glu Asp Leu Met
2060 2065 2070

Ala Ala Tyr Val Glu Asn Thr Ser Ile Thr Ile Lys Lys Pro Asn
2075 2080 2085

Glu Leu Ser Leu Ala Leu Gly Leu Lys Thr Ile Ala Thr His Gly
2090 2095 2100

Ile Ala Ala Ile Asn Ser Val Pro Trp Ser Lys Ile Leu Ala Tyr
2105 2110 2115

Val Lys Pro Phe Leu Gly Gln Ala Ala Ile Thr Thr Ser Asn Cys
2120 2125 2130

Ala Lys Arg Leu Ala Gln Arg Val Phe Asn Asn Tyr Met Pro Tyr
2135 2140 2145

Val Phe Thr Leu Leu Phe Gln Leu Cys Thr Phe Thr Lys Ser Thr
2150 2155 2160

Asn Ser Arg Ile Arg Ala Ser Leu Pro Thr Thr Ile Ala Lys Asn
2165 2170 2175

Ser Val Lys Ser Val Ala Lys Leu Cys Leu Asp Ala Gly Ile Asn
2180 2185 2190

Tyr Val Lys Ser Pro Lys Phe Ser Lys Leu Phe Thr Ile Ala Met
2195 2200 2205

Trp Leu Leu Leu Leu Ser Ile Cys Leu Gly Ser Leu Ile Cys Val
2210 2215 2220

Thr Ala Ala Phe Gly Val Leu Leu Ser Asn Phe Gly Ala Pro Ser
2225 2230 2235

Tyr Cys Asn Gly Val Arg Glu Leu Tyr Leu Asn Ser Ser Asn Val
2240 2245 2250

Thr Thr Met Asp Phe Cys Glu Gly Ser Phe Pro Cys Ser Ile Cys
2255 2260 2265

Leu Ser Gly Leu Asp Ser Leu Asp Ser Tyr Pro Ala Leu Glu Thr
2270 2275 2280

Ile Gln Val Thr Ile Ser Ser Tyr Lys Leu Asp Leu Thr Ile Leu
2285 2290 2295

Gly Leu Ala Ala Glu Trp Val Leu Ala Tyr Met Leu Phe Thr Lys
2300 2305 2310

Phe Phe Tyr Leu Leu Gly Leu Ser Ala Ile Met Gln Val Phe Phe
2315 2320 2325

Gly Tyr Phe Ala Ser His Phe Ile Ser Asn Ser Trp Leu Met Trp
2330 2335 2340

Phe Ile Ile Ser Ile Val Gln Met Ala Pro Val Ser Ala Met Val
2345 2350 2355

Arg Met Tyr Ile Phe Phe Ala Ser Phe Tyr Tyr Ile Trp Lys Ser
2360 2365 2370

Tyr Val His Ile Met Asp Gly Cys Thr Ser Ser Thr Cys Met Met
2375 2380 2385

Cys Tyr Lys Arg Asn Arg Ala Thr Arg Val Glu Cys Thr Thr Ile
2390 2395 2400

Val Asn Gly Met Lys Arg Ser Phe Tyr Val Tyr Ala Asn Gly Gly
2405 2410 2415

Arg Gly Phe Cys Lys Thr His Asn Trp Asn Cys Leu Asn Cys Asp
2420 2425 2430

Thr Phe Cys Thr Gly Ser Thr Phe Ile Ser Asp Glu Val Ala Arg
2435 2440 2445

Asp Leu Ser Leu Gln Phe Lys Arg Pro Ile Asn Pro Thr Asp Gln
2450 2455 2460

Ser Ser Tyr Ile Val Asp Ser Val Ala Val Lys Asn Gly Ala Leu
2465 2470 2475

His Leu Tyr Phe Asp Lys Ala Gly Gln Lys Thr Tyr Glu Arg His
2480 2485 2490

Pro Leu Ser His Phe Val Asn Leu Asp Asn Leu Arg Ala Asn Asn
2495 2500 2505

Thr Lys Gly Ser Leu Pro Ile Asn Val Ile Val Phe Asp Gly Lys
2510 2515 2520

Ser Lys Cys Asp Glu Ser Ala Ser Lys Ser Ala Ser Val Tyr Tyr
2525 2530 2535

Ser Gln Leu Met Cys Gln Pro Ile Leu Leu Leu Asp Gln Ala Leu
2540 2545 2550

Val Ser Asp Val Gly Asp Ser Thr Glu Val Ser Val Lys Met Phe
2555 2560 2565

Asp Ala Tyr Val Asp Thr Phe Ser Ala Thr Phe Ser Val Pro Met
2570 2575 2580

Glu Lys Leu Lys Ala Leu Val Ala Thr Ala His Ser Glu Leu Ala
2585 2590 2595

Lys Gly Val Ala Leu Asp Gly Val Leu Ser Thr Phe Val Ser Ala
2600 2605 2610

Ala Arg Gln Gly Val Val Asp Thr Asp Val Asp Thr Lys Asp Val
2615 2620 2625

Ile Glu Cys Leu Lys Leu Ser His His Ser Asp Leu Glu Val Thr
2630 2635 2640

Gly Asp Ser Cys Asn Asn Phe Met Leu Thr Tyr Asn Lys Val Glu
2645 2650 2655

Asn Met Thr Pro Arg Asp Leu Gly Ala Cys Ile Asp Cys Asn Ala
2660 2665 2670

Arg His Ile Asn Ala Gln Val Ala Lys Ser His Asn Val Ser Leu
2675 2680 2685

Ile Trp Asn Val Lys Asp Tyr Met Ser Leu Ser Glu Gln Leu Arg
2690 2695 2700

Lys Gln Ile Arg Ser Ala Ala Lys Lys Asn Asn Ile Pro Phe Arg
2705 2710 2715

Leu Thr Cys Ala Thr Thr Arg Gln Val Val Asn Val Ile Thr Thr
2720 2725 2730

Lys Ile Ser Leu Lys Gly Gly Lys Ile Val Ser Thr Cys Phe Lys
2735 2740 2745

Leu Met Leu Lys Ala Thr Leu Leu Cys Val Leu Ala Ala Leu Val
2750 2755 2760

Cys Tyr Ile Val Met Pro Val His Thr Leu Ser Ile His Asp Gly
2765 2770 2775

Tyr Thr Asn Glu Ile Ile Gly Tyr Lys Ala Ile Gln Asp Gly Val
2780 2785 2790

Thr Arg Asp Ile Ile Ser Thr Asp Asp Cys Phe Ala Asn Lys His
2795 2800 2805

Ala Gly Phe Asp Ala Trp Phe Ser Gln Arg Gly Gly Ser Tyr Lys
2810 2815 2820

Asn Asp Lys Ser Cys Pro Val Val Ala Ala Ile Ile Thr Arg Glu
2825 2830 2835

Ile Gly Phe Ile Val Pro Gly Leu Pro Gly Thr Val Leu Arg Ala
2840 2845 2850

Ile Asn Gly Asp Phe Leu His Phe Leu Pro Arg Val Phe Ser Ala
2855 2860 2865

Val Gly Asn Ile Cys Tyr Thr Pro Ser Lys Leu Ile Glu Tyr Ser
2870 2875 2880

Asp Phe Ala Thr Ser Ala Cys Val Leu Ala Ala Glu Cys Thr Ile
2885 2890 2895

Phe Lys Asp Ala Met Gly Lys Pro Val Pro Tyr Cys Tyr Asp Thr
2900 2905 2910

Asn Leu Leu Glu Gly Ser Ile Ser Tyr Ser Glu Leu Arg Pro Asp
2915 2920 2925

Thr Arg Tyr Val Leu Met Asp Gly Ser Ile Ile Gln Phe Pro Asn
2930 2935 2940

Thr Tyr Leu Glu Gly Ser Val Arg Val Val Thr Thr Phe Asp Ala

2945 2950 2955

Glu Tyr Cys Arg His Gly Thr Cys Glu Arg Ser Glu Val Gly Ile
2960 2965 2970

Cys Leu Ser Thr Ser Gly Arg Trp Val Leu Asn Asn Glu His Tyr
2975 2980 2985

Arg Ala Leu Ser Gly Val Phe Cys Gly Val Asp Ala Met Asn Leu
2990 2995 3000

Ile Ala Asn Ile Phe Thr Pro Leu Val Gln Pro Val Gly Ala Leu
3005 3010 3015

Asp Val Ser Ala Ser Val Val Ala Gly Gly Ile Ile Ala Ile Leu
3020 3025 3030

Val Thr Cys Ala Ala Tyr Tyr Phe Met Lys Phe Arg Arg Val Phe
3035 3040 3045

Gly Glu Tyr Asn His Val Val Ala Ala Asn Ala Leu Leu Phe Leu
3050 3055 3060

Met Ser Phe Thr Ile Leu Cys Leu Val Pro Ala Tyr Ser Phe Leu
3065 3070 3075

Pro Gly Val Tyr Ser Val Phe Tyr Leu Tyr Leu Thr Phe Tyr Phe
3080 3085 3090

Thr Asn Asp Val Ser Phe Leu Ala His Leu Gln Trp Phe Ala Met
3095 3100 3105

Phe Ser Pro Ile Val Pro Phe Trp Ile Thr Ala Ile Tyr Val Phe
3110 3115 3120

Cys Ile Ser Leu Lys His Cys His Trp Phe Phe Asn Asn Tyr Leu
3125 3130 3135

Arg Lys Arg Val Met Phe Asn Gly Val Thr Phe Ser Thr Phe Glu
3140 3145 3150

Glu Ala Ala Leu Cys Thr Phe Leu Leu Asn Lys Glu Met Tyr Leu
3155 3160 3165

Lys Leu Arg Ser Glu Thr Leu Leu Pro Leu Thr Gln Tyr Asn Arg
3170 3175 3180

Tyr Leu Ala Leu Tyr Asn Lys Tyr Lys Tyr Phe Ser Gly Ala Leu
3185 3190 3195

Asp Thr Thr Ser Tyr Arg Glu Ala Ala Cys Cys His Leu Ala Lys
3200 3205 3210

Ala Leu Asn Asp Phe Ser Asn Ser Gly Ala Asp Val Leu Tyr Gln
3215 3220 3225

Pro Pro Gln Thr Ser Ile Thr Ser Ala Val Leu Gln Ser Gly Phe
3230 3235 3240

Arg Lys Met Ala Phe Pro Ser Gly Lys Val Glu Gly Cys Met Val
3245 3250 3255

Gln Val Thr Cys Gly Thr Thr Thr Leu Asn Gly Leu Trp Leu Asp
3260 3265 3270

Asp Thr Val Tyr Cys Pro Arg His Val Ile Cys Thr Ala Glu Asp
3275 3280 3285

Met Leu Asn Pro Asn Tyr Glu Asp Leu Leu Ile Arg Lys Ser Asn
3290 3295 3300

His Ser Phe Leu Val Gln Ala Gly Asn Val Gln Leu Arg Val Ile
3305 3310 3315

Gly His Ser Met Gln Asn Cys Leu Leu Arg Leu Lys Val Asp Thr
3320 3325 3330

Ser Asn Pro Lys Thr Pro Lys Tyr Lys Phe Val Arg Ile Gln Pro
3335 3340 3345

Gly Gln Thr Phe Ser Val Leu Ala Cys Tyr Asn Gly Ser Pro Ser
3350 3355 3360

Gly Val Tyr Gln Cys Ala Met Arg Pro Asn His Thr Ile Lys Gly
3365 3370 3375

Ser Phe Leu Asn Gly Ser Cys Gly Ser Val Gly Phe Asn Ile Asp
3380 3385 3390

Tyr Asp Cys Val Ser Phe Cys Tyr Met His His Met Glu Leu Pro
3395 3400 3405

Thr Gly Val His Ala Gly Thr Asp Leu Glu Gly Lys Phe Tyr Gly
3410 3415 3420

Pro Phe Val Asp Arg Gln Thr Ala Gln Ala Ala Gly Thr Asp Thr
3425 3430 3435

Thr Ile Thr Leu Asn Val Leu Ala Trp Leu Tyr Ala Ala Val Ile
3440 3445 3450

Asn Gly Asp Arg Trp Phe Leu Asn Arg Phe Thr Thr Thr Leu Asn
3455 3460 3465

Asp Phe Asn Leu Val Ala Met Lys Tyr Asn Tyr Glu Pro Leu Thr
3470 3475 3480

Gln Asp His Val Asp Ile Leu Gly Pro Leu Ser Ala Gln Thr Gly
3485 3490 3495

Ile Ala Val Leu Asp Met Cys Ala Ala Leu Lys Glu Leu Leu Gln
3500 3505 3510

Asn Gly Met Asn Gly Arg Thr Ile Leu Gly Ser Thr Ile Leu Glu
3515 3520 3525

Asp Glu Phe Thr Pro Phe Asp Val Val Arg Gln Cys Ser Gly Val
3530 3535 3540

Thr Phe Gln Gly Lys Phe Lys Lys Ile Val Lys Gly Thr His His
3545 3550 3555

Trp Met Leu Leu Thr Phe Leu Thr Ser Leu Leu Ile Leu Val Gln
3560 3565 3570

Ser Thr Gln Trp Ser Leu Phe Phe Phe Val Tyr Glu Asn Ala Phe
3575 3580 3585

Leu Pro Phe Thr Leu Gly Ile Met Ala Ile Ala Ala Cys Ala Met
3590 3595 3600

Leu Leu Val Lys His Lys His Ala Phe Leu Cys Leu Phe Leu Leu
3605 3610 3615

Pro Ser Leu Ala Thr Val Ala Tyr Phe Asn Met Val Tyr Met Pro
3620 3625 3630

Ala Ser Trp Val Met Arg Ile Met Thr Trp Leu Glu Leu Ala Asp
3635 3640 3645

Thr Ser Leu Ser Gly Tyr Arg Leu Lys Asp Cys Val Met Tyr Ala
3650 3655 3660

Ser Ala Leu Val Leu Leu Ile Leu Met Thr Ala Arg Thr Val Tyr
3665 3670 3675

Asp Asp Ala Ala Arg Arg Val Trp Thr Leu Met Asn Val Ile Thr
3680 3685 3690

Leu Val Tyr Lys Val Tyr Tyr Gly Asn Ala Leu Asp Gln Ala Ile
3695 3700 3705

Ser Met Trp Ala Leu Val Ile Ser Val Thr Ser Asn Tyr Ser Gly
3710 3715 3720

Val Val Thr Thr Ile Met Phe Leu Ala Arg Ala Ile Val Phe Val
3725 3730 3735

Cys Val Glu Tyr Tyr Pro Leu Leu Phe Ile Thr Gly Asn Thr Leu
3740 3745 3750

Gln Cys Ile Met Leu Val Tyr Cys Phe Leu Gly Tyr Cys Cys Cys
3755 3760 3765

Cys Tyr Phe Gly Leu Phe Cys Leu Leu Asn Arg Tyr Phe Arg Leu
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Thr Leu Gly Val Tyr Asp Tyr Leu Val Ser Thr Gln Glu Phe Arg
3785 3790 3795

Tyr Met Asn Ser Gln Gly Leu Leu Pro Pro Lys Ser Ser Ile Asp
3800 3805 3810

Ala Phe Lys Leu Asn Ile Lys Leu Leu Gly Ile Gly Gly Lys Pro
3815 3820 3825

Cys Ile Lys Val Ala Thr Val Gln Ser Lys Met Ser Asp Val Lys
3830 3835 3840

Cys Thr Ser Val Val Leu Leu Ser Val Leu Gln Gln Leu Arg Val
3845 3850 3855

Glu Ser Ser Ser Lys Leu Trp Ala Gln Cys Val Gln Leu His Asn

3860 3865 3870

Asp Ile Leu Leu Ala Lys Asp Thr Thr Glu Ala Phe Glu Lys Met
3875 3880 3885

Val Ser Leu Leu Ser Val Leu Leu Ser Met Gln Gly Ala Val Asp
3890 3895 3900

Ile Asn Arg Leu Cys Glu Glu Met Leu Asp Asn Arg Ala Thr Leu
3905 3910 3915

Gln Ala Ile Ala Ser Glu Phe Ser Ser Leu Pro Ser Tyr Ala Ala
3920 3925 3930

Tyr Ala Thr Ala Gln Glu Ala Tyr Glu Gln Ala Val Ala Asn Gly
3935 3940 3945

Asp Ser Glu Val Val Leu Lys Lys Leu Lys Lys Ser Leu Asn Val
3950 3955 3960

Ala Lys Ser Glu Phe Asp Arg Asp Ala Ala Met Gln Arg Lys Leu
3965 3970 3975

Glu Lys Met Ala Asp Gln Ala Met Thr Gln Met Tyr Lys Gln Ala
3980 3985 3990

Arg Ser Glu Asp Lys Arg Ala Lys Val Thr Ser Ala Met Gln Thr
3995 4000 4005

Met Leu Phe Thr Met Leu Arg Lys Leu Asp Asn Asp Ala Leu Asn
4010 4015 4020

Asn Ile Ile Asn Asn Ala Arg Asp Gly Cys Val Pro Leu Asn Ile
4025 4030 4035

Ile Pro Leu Thr Thr Ala Ala Lys Leu Met Val Val Val Pro Asp
4040 4045 4050

Tyr Gly Thr Tyr Lys Asn Thr Cys Asp Gly Asn Thr Phe Thr Tyr
4055 4060 4065

Ala Ser Ala Leu Trp Glu Ile Gln Gln Val Val Asp Ala Asp Ser
4070 4075 4080

Lys Ile Val Gln Leu Ser Glu Ile Asn Met Asp Asn Ser Pro Asn
4085 4090 4095

Leu Ala Trp Pro Leu Ile Val Thr Ala Leu Arg Ala Asn Ser Ala
4100 4105 4110

Val Lys Leu Gln Asn Asn Glu Leu Ser Pro Val Ala Leu Arg Gln
4115 4120 4125

Met Ser Cys Ala Ala Gly Thr Thr Gln Thr Ala Cys Thr Asp Asp
4130 4135 4140

Asn Ala Leu Ala Tyr Tyr Asn Asn Ser Lys Gly Gly Arg Phe Val
4145 4150 4155

Leu Ala Leu Leu Ser Asp His Gln Asp Leu Lys Trp Ala Arg Phe
4160 4165 4170

Pro Lys Ser Asp Gly Thr Gly Thr Ile Tyr Thr Glu Leu Glu Pro
4175 4180 4185

Pro Cys Arg Phe Val Thr Asp Thr Pro Lys Gly Pro Lys Val Lys
4190 4195 4200

Tyr Leu Tyr Phe Ile Lys Gly Leu Asn Asn Leu Asn Arg Gly Met
4205 4210 4215

Val Leu Gly Ser Leu Ala Ala Thr Val Arg Leu Gln Ala Gly Asn
4220 4225 4230

Ala Thr Glu Val Pro Ala Asn Ser Thr Val Leu Ser Phe Cys Ala
4235 4240 4245

Phe Ala Val Asp Pro Ala Lys Ala Tyr Lys Asp Tyr Leu Ala Ser
4250 4255 4260

Gly Gly Gln Pro Ile Thr Asn Cys Val Lys Met Leu Cys Thr His
4265 4270 4275

Thr Gly Thr Gly Gln Ala Ile Thr Val Thr Pro Glu Ala Asn Met
4280 4285 4290

Asp Gln Glu Ser Phe Gly Gly Ala Ser Cys Cys Leu Tyr Cys Arg
4295 4300 4305

Cys His Ile Asp His Pro Asn Pro Lys Gly Phe Cys Asp Leu Lys
4310 4315 4320

Gly Lys Tyr Val Gln Ile Pro Thr Thr Cys Ala Asn Asp Pro Val
4325 4330 4335

Gly Phe Thr Leu Arg Asn Thr Val Cys Thr Val Cys Gly Met Trp
4340 4345 4350

Lys Gly Tyr Gly Cys Ser Cys Asp Gln Leu Arg Glu Pro Leu Met
4355 4360 4365

Gln Ser Ala Asp Ala Ser Thr Phe
4370 4375

<210> 64
<211> 2697
<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 64

Phe Lys Arg Val Cys Gly Val Ser Ala Ala Arg Leu Thr Pro Cys Gly
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Thr Gly Thr Ser Thr Asp Val Val Tyr Arg Ala Phe Asp Ile Tyr Asn
20 25 30

Glu Lys Val Ala Gly Phe Ala Lys Phe Leu Lys Thr Asn Cys Cys Arg
35 40 45

Phe Gln Glu Lys Asp Glu Glu Gly Asn Leu Leu Asp Ser Tyr Phe Val
50 55 60

Val Lys Arg His Thr Met Ser Asn Tyr Gln His Glu Glu Thr Ile Tyr
65 70 75 80

Asn Leu Val Lys Asp Cys Pro Ala Val Ala Val His Asp Phe Phe Lys
85 90 95

Phe Arg Val Asp Gly Asp Met Val Pro His Ile Ser Arg Gln Arg Leu
100 105 110

Thr Lys Tyr Thr Met Ala Asp Leu Val Tyr Ala Leu Arg His Phe Asp
115 120 125

Glu Gly Asn Cys Asp Thr Leu Lys Glu Ile Leu Val Thr Tyr Asn Cys
130 135 140

Cys Asp Asp Asp Tyr Phe Asn Lys Lys Asp Trp Tyr Asp Phe Val Glu

145 150 155 160

Asn Pro Asp Ile Leu Arg Val Tyr Ala Asn Leu Gly Glu Arg Val Arg
165 170 175

Gln Ser Leu Leu Lys Thr Val Gln Phe Cys Asp Ala Met Arg Asp Ala
180 185 190

Gly Ile Val Gly Val Leu Thr Leu Asp Asn Gln Asp Leu Asn Gly Asn
195 200 205

Trp Tyr Asp Phe Gly Asp Phe Val Gln Val Ala Pro Gly Cys Gly Val
210 215 220

Pro Ile Val Asp Ser Tyr Tyr Ser Leu Leu Met Pro Ile Leu Thr Leu
225 230 235 240

Thr Arg Ala Leu Ala Ala Glu Ser His Met Asp Ala Asp Leu Ala Lys
245 250 255

Pro Leu Ile Lys Trp Asp Leu Leu Lys Tyr Asp Phe Thr Glu Glu Arg
260 265 270

Leu Cys Leu Phe Asp Arg Tyr Phe Lys Tyr Trp Asp Gln Thr Tyr His
275 280 285

Pro Asn Cys Ile Asn Cys Leu Asp Asp Arg Cys Ile Leu His Cys Ala
290 295 300

Asn Phe Asn Val Leu Phe Ser Thr Val Phe Pro Pro Thr Ser Phe Gly
305 310 315 320

Pro Leu Val Arg Lys Ile Phe Val Asp Gly Val Pro Phe Val Val Ser
325 330 335

Thr Gly Tyr His Phe Arg Glu Leu Gly Val Val His Asn Gln Asp Val
340 345 350

Asn Leu His Ser Ser Arg Leu Ser Phe Lys Glu Leu Leu Val Tyr Ala
355 360 365

Ala Asp Pro Ala Met His Ala Ala Ser Gly Asn Leu Leu Leu Asp Lys
370 375 380

Arg Thr Thr Cys Phe Ser Val Ala Ala Leu Thr Asn Asn Val Ala Phe
385 390 395 400

Gln Thr Val Lys Pro Gly Asn Phe Asn Lys Asp Phe Tyr Asp Phe Ala
405 410 415

Val Ser Lys Gly Phe Phe Lys Glu Gly Ser Ser Val Glu Leu Lys His
420 425 430

Phe Phe Phe Ala Gln Asp Gly Asn Ala Ala Ile Ser Asp Tyr Asp Tyr
435 440 445

Tyr Arg Tyr Asn Leu Pro Thr Met Cys Asp Ile Arg Gln Leu Leu Phe
450 455 460

Val Val Glu Val Val Asp Lys Tyr Phe Asp Cys Tyr Asp Gly Gly Cys
465 470 475 480

Ile Asn Ala Asn Gln Val Ile Val Asn Asn Leu Asp Lys Ser Ala Gly
485 490 495

Phe Pro Phe Asn Lys Trp Gly Lys Ala Arg Leu Tyr Tyr Asp Ser Met
500 505 510

Ser Tyr Glu Asp Gln Asp Ala Leu Phe Ala Tyr Thr Lys Arg Asn Val
515 520 525

Ile Pro Thr Ile Thr Gln Met Asn Leu Lys Tyr Ala Ile Ser Ala Lys
530 535 540

Asn Arg Ala Arg Thr Val Ala Gly Val Ser Ile Cys Ser Thr Met Thr
545 550 555 560

Asn Arg Gln Phe His Gln Lys Leu Leu Lys Ser Ile Ala Ala Thr Arg
565 570 575

Gly Ala Thr Val Val Ile Gly Thr Ser Lys Phe Tyr Gly Gly Trp His
580 585 590

Asn Met Leu Lys Thr Val Tyr Ser Asp Val Glu Thr Pro His Leu Met
595 600 605

Gly Trp Asp Tyr Pro Lys Cys Asp Arg Ala Met Pro Asn Met Leu Arg
610 615 620

Ile Met Ala Ser Leu Val Leu Ala Arg Lys His Asn Thr Cys Cys Asn
625 630 635 640

Leu Ser His Arg Phe Tyr Arg Leu Ala Asn Glu Cys Ala Gln Val Leu
645 650 655

Ser Glu Met Val Met Cys Gly Gly Ser Leu Tyr Val Lys Pro Gly Gly
660 665 670

Thr Ser Ser Gly Asp Ala Thr Thr Ala Tyr Ala Asn Ser Val Phe Asn
675 680 685

Ile Cys Gln Ala Val Thr Ala Asn Val Asn Ala Leu Leu Ser Thr Asp
690 695 700

Gly Asn Lys Ile Ala Asp Lys Tyr Val Arg Asn Leu Gln His Arg Leu
705 710 715 720

Tyr Glu Cys Leu Tyr Arg Asn Arg Asp Val Asp His Glu Phe Val Asp
725 730 735

Glu Phe Tyr Ala Tyr Leu Arg Lys His Phe Ser Met Met Ile Leu Ser
740 745 750

Asp Asp Ala Val Val Cys Tyr Asn Ser Asn Tyr Ala Ala Gln Gly Leu
755 760 765

Val Ala Ser Ile Lys Asn Phe Lys Ala Val Leu Tyr Tyr Gln Asn Asn
770 775 780

Val Phe Met Ser Glu Ala Lys Cys Trp Thr Glu Thr Asp Leu Thr Lys
785 790 795 800

Gly Pro His Glu Phe Cys Ser Gln His Thr Met Leu Val Lys Gln Gly
805 810 815

Asp Asp Tyr Val Tyr Leu Pro Tyr Pro Asp Pro Ser Arg Ile Leu Gly
820 825 830

Ala Gly Cys Phe Val Asp Asp Ile Val Lys Thr Asp Gly Thr Leu Met
835 840 845

Ile Glu Arg Phe Val Ser Leu Ala Ile Asp Ala Tyr Pro Leu Thr Lys
850 855 860

His Pro Asn Gln Glu Tyr Ala Asp Val Phe His Leu Tyr Leu Gln Tyr
865 870 875 880

Ile Arg Lys Leu His Asp Glu Leu Thr Gly His Met Leu Asp Met Tyr
885 890 895

Ser Val Met Leu Thr Asn Asp Asn Thr Ser Arg Tyr Trp Glu Pro Glu
900 905 910

Phe Tyr Glu Ala Met Tyr Thr Pro His Thr Val Leu Gln Ala Val Gly
915 920 925

Ala Cys Val Leu Cys Asn Ser Gln Thr Ser Leu Arg Cys Gly Ala Cys
930 935 940

Ile Arg Arg Pro Phe Leu Cys Cys Lys Cys Cys Tyr Asp His Val Ile
945 950 955 960

Ser Thr Ser His Lys Leu Val Leu Ser Val Asn Pro Tyr Val Cys Asn
965 970 975

Ala Pro Gly Cys Asp Val Thr Asp Val Thr Gln Leu Tyr Leu Gly Gly
980 985 990

Met Ser Tyr Tyr Cys Lys Ser His Lys Pro Pro Ile Ser Phe Pro Leu
995 1000 1005

Cys Ala Asn Gly Gln Val Phe Gly Leu Tyr Lys Asn Thr Cys Val
1010 1015 1020

Gly Ser Asp Asn Val Thr Asp Phe Asn Ala Ile Ala Thr Cys Asp
1025 1030 1035

Trp Thr Asn Ala Gly Asp Tyr Ile Leu Ala Asn Thr Cys Thr Glu
1040 1045 1050

Arg Leu Lys Leu Phe Ala Ala Glu Thr Leu Lys Ala Thr Glu Glu
1055 1060 1065

Thr Phe Lys Leu Ser Tyr Gly Ile Ala Thr Val Arg Glu Val Leu
1070 1075 1080

Ser Asp Arg Glu Leu His Leu Ser Trp Glu Val Gly Lys Pro Arg
1085 1090 1095

Pro Pro Leu Asn Arg Asn Tyr Val Phe Thr Gly Tyr Arg Val Thr
1100 1105 1110

Lys Asn Ser Lys Val Gln Ile Gly Glu Tyr Thr Phe Glu Lys Gly

1115 1120 1125

Asp Tyr Gly Asp Ala Val Val Tyr Arg Gly Thr Thr Thr Tyr Lys
1130 1135 1140

Leu Asn Val Gly Asp Tyr Phe Val Leu Thr Ser His Thr Val Met
1145 1150 1155

Pro Leu Ser Ala Pro Thr Leu Val Pro Gln Glu His Tyr Val Arg
1160 1165 1170

Ile Thr Gly Leu Tyr Pro Thr Leu Asn Ile Ser Asp Glu Phe Ser
1175 1180 1185

Ser Asn Val Ala Asn Tyr Gln Lys Val Gly Met Gln Lys Tyr Ser
1190 1195 1200

Thr Leu Gln Gly Pro Pro Gly Thr Gly Lys Ser His Phe Ala Ile
1205 1210 1215

Gly Leu Ala Leu Tyr Tyr Pro Ser Ala Arg Ile Val Tyr Thr Ala
1220 1225 1230

Cys Ser His Ala Ala Val Asp Ala Leu Cys Glu Lys Ala Leu Lys
1235 1240 1245

Tyr Leu Pro Ile Asp Lys Cys Ser Arg Ile Ile Pro Ala Arg Ala
1250 1255 1260

Arg Val Glu Cys Phe Asp Lys Phe Lys Val Asn Ser Thr Leu Glu
1265 1270 1275

Gln Tyr Val Phe Cys Thr Val Asn Ala Leu Pro Glu Thr Thr Ala
1280 1285 1290

Asp Ile Val Val Phe Asp Glu Ile Ser Met Ala Thr Asn Tyr Asp
1295 1300 1305

Leu Ser Val Val Asn Ala Arg Leu Arg Ala Lys His Tyr Val Tyr
1310 1315 1320

Ile Gly Asp Pro Ala Gln Leu Pro Ala Pro Arg Thr Leu Leu Thr
1325 1330 1335

Lys Gly Thr Leu Glu Pro Glu Tyr Phe Asn Ser Val Cys Arg Leu
1340 1345 1350

Met Lys Thr Ile Gly Pro Asp Met Phe Leu Gly Thr Cys Arg Arg
1355 1360 1365

Cys Pro Ala Glu Ile Val Asp Thr Val Ser Ala Leu Val Tyr Asp
1370 1375 1380

Asn Lys Leu Lys Ala His Lys Asp Lys Ser Ala Gln Cys Phe Lys
1385 1390 1395

Met Phe Tyr Lys Gly Val Ile Thr His Asp Val Ser Ser Ala Ile
1400 1405 1410

Asn Arg Pro Gln Ile Gly Val Val Arg Glu Phe Leu Thr Arg Asn
1415 1420 1425

Pro Ala Trp Arg Lys Ala Val Phe Ile Ser Pro Tyr Asn Ser Gln
1430 1435 1440

Asn Ala Val Ala Ser Lys Ile Leu Gly Leu Pro Thr Gln Thr Val
1445 1450 1455

Asp Ser Ser Gln Gly Ser Glu Tyr Asp Tyr Val Ile Phe Thr Gln
1460 1465 1470

Thr Thr Glu Thr Ala His Ser Cys Asn Val Asn Arg Phe Asn Val
1475 1480 1485

Ala Ile Thr Arg Ala Lys Ile Gly Ile Leu Cys Ile Met Ser Asp
1490 1495 1500

Arg Asp Leu Tyr Asp Lys Leu Gln Phe Thr Ser Leu Glu Ile Pro
1505 1510 1515

Arg Arg Asn Val Ala Thr Leu Gln Ala Glu Asn Val Thr Gly Leu
1520 1525 1530

Phe Lys Asp Cys Ser Lys Ile Ile Thr Gly Leu His Pro Thr Gln
1535 1540 1545

Ala Pro Thr His Leu Ser Val Asp Ile Lys Phe Lys Thr Glu Gly
1550 1555 1560

Leu Cys Val Asp Ile Pro Gly Ile Pro Lys Asp Met Thr Tyr Arg
1565 1570 1575

Arg Leu Ile Ser Met Met Gly Phe Lys Met Asn Tyr Gln Val Asn
1580 1585 1590

Gly Tyr Pro Asn Met Phe Ile Thr Arg Glu Glu Ala Ile Arg His
1595 1600 1605

Val Arg Ala Trp Ile Gly Phe Asp Val Glu Gly Cys His Ala Thr
1610 1615 1620

Arg Asp Ala Val Gly Thr Asn Leu Pro Leu Gln Leu Gly Phe Ser
1625 1630 1635

Thr Gly Val Asn Leu Val Ala Val Pro Thr Gly Tyr Val Asp Thr
1640 1645 1650

Glu Asn Asn Thr Glu Phe Thr Arg Val Asn Ala Lys Pro Pro Pro
1655 1660 1665

Gly Asp Gln Phe Lys His Leu Ile Pro Leu Met Tyr Lys Gly Leu
1670 1675 1680

Pro Trp Asn Val Val Arg Ile Lys Ile Val Gln Met Leu Ser Asp
1685 1690 1695

Thr Leu Lys Gly Leu Ser Asp Arg Val Val Phe Val Leu Trp Ala
1700 1705 1710

His Gly Phe Glu Leu Thr Ser Met Lys Tyr Phe Val Lys Ile Gly
1715 1720 1725

Pro Glu Arg Thr Cys Cys Leu Cys Asp Lys Arg Ala Thr Cys Phe
1730 1735 1740

Ser Thr Ser Ser Asp Thr Tyr Ala Cys Trp Asn His Ser Val Gly
1745 1750 1755

Phe Asp Tyr Val Tyr Asn Pro Phe Met Ile Asp Val Gln Gln Trp
1760 1765 1770

Gly Phe Thr Gly Asn Leu Gln Ser Asn His Asp Gln His Cys Gln
1775 1780 1785

Val His Gly Asn Ala His Val Ala Ser Cys Asp Ala Ile Met Thr
1790 1795 1800

Arg Cys Leu Ala Val His Glu Cys Phe Val Lys Arg Val Asp Trp
1805 1810 1815

Ser Val Glu Tyr Pro Ile Ile Gly Asp Glu Leu Arg Val Asn Ser
1820 1825 1830

Ala Cys Arg Lys Val Gln His Met Val Val Lys Ser Ala Leu Leu
1835 1840 1845

Ala Asp Lys Phe Pro Val Leu His Asp Ile Gly Asn Pro Lys Ala
1850 1855 1860

Ile Lys Cys Val Pro Gln Ala Glu Val Glu Trp Lys Phe Tyr Asp
1865 1870 1875

Ala Gln Pro Cys Ser Asp Lys Ala Tyr Lys Ile Glu Glu Leu Phe
1880 1885 1890

Tyr Ser Tyr Ala Thr His His Asp Lys Phe Thr Asp Gly Val Cys
1895 1900 1905

Leu Phe Trp Asn Cys Asn Val Asp Arg Tyr Pro Ala Asn Ala Ile
1910 1915 1920

Val Cys Arg Phe Asp Thr Arg Val Leu Ser Asn Leu Asn Leu Pro
1925 1930 1935

Gly Cys Asp Gly Gly Ser Leu Tyr Val Asn Lys His Ala Phe His
1940 1945 1950

Thr Pro Ala Phe Asp Lys Ser Ala Phe Thr Asn Leu Lys Gln Leu
1955 1960 1965

Pro Phe Phe Tyr Tyr Ser Asp Ser Pro Cys Glu Ser His Gly Lys
1970 1975 1980

Gln Val Val Ser Asp Ile Asp Tyr Val Pro Leu Lys Ser Ala Thr
1985 1990 1995

Cys Ile Thr Arg Cys Asn Leu Gly Gly Ala Val Cys Arg His His
2000 2005 2010

Ala Asn Glu Tyr Arg Gln Tyr Leu Asp Ala Tyr Asn Met Met Ile
2015 2020 2025

Ser Ala Gly Phe Ser Leu Trp Ile Tyr Lys Gln Phe Asp Thr Tyr

2030 2035 2040

Asn Leu Trp Asn Thr Phe Thr Arg Leu Gln Ser Leu Glu Asn Val
2045 2050 2055

Ala Tyr Asn Val Val Asn Lys Gly His Phe Asp Gly His Ala Gly
2060 2065 2070

Glu Ala Pro Val Ser Ile Ile Asn Asn Ala Val Tyr Thr Lys Val
2075 2080 2085

Asp Gly Ile Asp Val Glu Ile Phe Glu Asn Lys Thr Thr Leu Pro
2090 2095 2100

Val Asn Val Ala Phe Glu Leu Trp Ala Lys Arg Asn Ile Lys Pro
2105 2110 2115

Val Pro Glu Ile Lys Ile Leu Asn Asn Leu Gly Val Asp Ile Ala
2120 2125 2130

Ala Asn Thr Val Ile Trp Asp Tyr Lys Arg Glu Ala Pro Ala His
2135 2140 2145

Val Ser Thr Ile Gly Val Cys Thr Met Thr Asp Ile Ala Lys Lys
2150 2155 2160

Pro Thr Glu Ser Ala Cys Ser Ser Leu Thr Val Leu Phe Asp Gly
2165 2170 2175

Arg Val Glu Gly Gln Val Asp Leu Phe Arg Asn Ala Arg Asn Gly
2180 2185 2190

Val Leu Ile Thr Glu Gly Ser Val Lys Gly Leu Thr Pro Ser Lys
2195 2200 2205

Gly Pro Ala Gln Ala Ser Val Asn Gly Val Thr Leu Ile Gly Glu
2210 2215 2220

Ser Val Lys Thr Gln Phe Asn Tyr Phe Lys Lys Val Asp Gly Ile
2225 2230 2235

Ile Gln Gln Leu Pro Glu Thr Tyr Phe Thr Gln Ser Arg Asp Leu
2240 2245 2250

Glu Asp Phe Lys Pro Arg Ser Gln Met Glu Thr Asp Phe Leu Glu
2255 2260 2265

Leu Ala Met Asp Glu Phe Ile Gln Arg Tyr Lys Leu Glu Gly Tyr
2270 2275 2280

Ala Phe Glu His Ile Val Tyr Gly Asp Phe Ser His Gly Gln Leu
2285 2290 2295

Gly Gly Leu His Leu Met Ile Gly Leu Ala Lys Arg Ser Gln Asp
2300 2305 2310

Ser Pro Leu Lys Leu Glu Asp Phe Ile Pro Met Asp Ser Thr Val
2315 2320 2325

Lys Asn Tyr Phe Ile Thr Asp Ala Gln Thr Gly Ser Ser Lys Cys
2330 2335 2340

Val Cys Ser Val Ile Asp Leu Leu Leu Asp Asp Phe Val Glu Ile
2345 2350 2355

Ile Lys Ser Gln Asp Leu Ser Val Ile Ser Lys Val Val Lys Val
2360 2365 2370

Thr Ile Asp Tyr Ala Glu Ile Ser Phe Met Leu Trp Cys Lys Asp
2375 2380 2385

Gly His Val Glu Thr Phe Tyr Pro Lys Leu Gln Ala Ser Gln Ala
2390 2395 2400

Trp Gln Pro Gly Val Ala Met Pro Asn Leu Tyr Lys Met Gln Arg
2405 2410 2415

Met Leu Leu Glu Lys Cys Asp Leu Gln Asn Tyr Gly Glu Asn Ala
2420 2425 2430

Val Ile Pro Lys Gly Ile Met Met Asn Val Ala Lys Tyr Thr Gln
2435 2440 2445

Leu Cys Gln Tyr Leu Asn Thr Leu Thr Leu Ala Val Pro Tyr Asn
2450 2455 2460

Met Arg Val Ile His Phe Gly Ala Gly Ser Asp Lys Gly Val Ala
2465 2470 2475

Pro Gly Thr Ala Val Leu Arg Gln Trp Leu Pro Thr Gly Thr Leu
2480 2485 2490

Leu Val Asp Ser Asp Leu Asn Asp Phe Val Ser Asp Ala Asp Ser
2495 2500 2505

Thr Leu Ile Gly Asp Cys Ala Thr Val His Thr Ala Asn Lys Trp
2510 2515 2520

Asp Leu Ile Ile Ser Asp Met Tyr Asp Pro Arg Thr Lys His Val
2525 2530 2535

Thr Lys Glu Asn Asp Ser Lys Glu Gly Phe Phe Thr Tyr Leu Cys
2540 2545 2550

Gly Phe Ile Lys Gln Lys Leu Ala Leu Gly Gly Ser Ile Ala Val
2555 2560 2565

Lys Ile Thr Glu His Ser Trp Asn Ala Asp Leu Tyr Lys Leu Met
2570 2575 2580

Gly His Phe Ser Trp Trp Thr Ala Phe Val Thr Asn Val Asn Ala
2585 2590 2595

Ser Ser Ser Glu Ala Phe Leu Ile Gly Ala Asn Tyr Leu Gly Lys
2600 2605 2610

Pro Lys Glu Gln Ile Asp Gly Tyr Thr Met His Ala Asn Tyr Ile
2615 2620 2625

Phe Trp Arg Asn Thr Asn Pro Ile Gln Leu Ser Ser Tyr Ser Leu
2630 2635 2640

Phe Asp Met Ser Lys Phe Pro Leu Lys Leu Arg Gly Thr Ala Val
2645 2650 2655

Met Ser Leu Lys Glu Asn Gln Ile Asn Asp Met Ile Tyr Ser Leu
2660 2665 2670

Leu Glu Lys Gly Arg Leu Ile Ile Arg Glu Asn Asn Arg Val Val
2675 2680 2685

Val Ser Ser Asp Ile Leu Val Asn Asn
2690 2695

<210> 65
<211> 274
<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 65

Met Asp Leu Phe Met Arg Phe Phe Thr Leu Arg Ser Ile Thr Ala Gln
1 5 10 15

Pro Val Lys Ile Asp Asn Ala Ser Pro Ala Ser Thr Val His Ala Thr
20 25 30

Ala Thr Ile Pro Leu Gln Ala Ser Leu Pro Phe Gly Trp Leu Val Ile
35 40 45

Gly Val Ala Phe Leu Ala Val Phe Gln Ser Ala Thr Lys Ile Ile Ala
50 55 60

Leu Asn Lys Arg Trp Gln Leu Ala Leu Tyr Lys Gly Phe Gln Phe Ile
65 70 75 80

Cys Asn Leu Leu Leu Leu Phe Val Thr Ile Tyr Ser His Leu Leu Leu
85 90 95

Val Ala Ala Gly Met Glu Ala Gln Phe Leu Tyr Leu Tyr Ala Leu Ile
100 105 110

Tyr Phe Leu Gln Cys Ile Asn Ala Cys Arg Ile Ile Met Arg Cys Trp
115 120 125

Leu Cys Trp Lys Cys Lys Ser Lys Asn Pro Leu Leu Tyr Asp Ala Asn
130 135 140

Tyr Phe Val Cys Trp His Thr His Asn Tyr Asp Tyr Cys Ile Pro Tyr
145 150 155 160

Asn Ser Val Thr Asp Thr Ile Val Val Thr Glu Gly Asp Gly Ile Ser
165 170 175

Thr Pro Lys Leu Lys Glu Asp Tyr Gln Ile Gly Gly Tyr Ser Glu Asp
180 185 190

Arg His Ser Gly Val Lys Asp Tyr Val Val Val His Gly Tyr Phe Thr
195 200 205

Glu Val Tyr Tyr Gln Leu Glu Ser Thr Gln Ile Thr Thr Asp Thr Gly
210 215 220

Ile Glu Asn Ala Thr Phe Phe Ile Phe Asn Lys Leu Val Lys Asp Pro
225 230 235 240

Pro Asn Val Gln Ile His Thr Ile Asp Gly Ser Ser Gly Val Ala Asn
245 250 255

Pro Ala Met Asp Pro Ile Tyr Asp Glu Pro Thr Thr Thr Thr Ser Val
260 265 270

Pro Leu

<210> 66
<211> 154
<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 66

Met Met Pro Thr Thr Leu Phe Ala Gly Thr His Ile Thr Met Thr Thr
1 5 10 15

Val Tyr His Ile Thr Val Ser Gln Ile Gln Leu Ser Leu Leu Lys Val
20 25 30

Thr Ala Phe Gln His Gln Asn Ser Lys Lys Thr Thr Lys Leu Val Val
35 40 45

Ile Leu Arg Ile Gly Thr Gln Val Leu Lys Thr Met Ser Leu Tyr Met
50 55 60

Ala Ile Ser Pro Lys Phe Thr Thr Ser Leu Ser Leu His Lys Leu Leu
65 70 75 80

Gln Thr Leu Val Leu Lys Met Leu His Ser Ser Ser Leu Thr Ser Leu
85 90 95

Leu Lys Thr His Arg Met Cys Lys Tyr Thr Gln Ser Thr Ala Leu Gln
100 105 110

Glu Leu Leu Ile Gln Gln Trp Ile Gln Phe Met Met Ser Arg Arg Arg
115 120 125

Leu Leu Ala Cys Leu Cys Lys His Lys Lys Val Ser Thr Asn Leu Cys
130 135 140

Thr His Ser Phe Arg Lys Lys Gln Val Arg
145 150

<210> 67
<211> 63
<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 67

Met Phe His Leu Val Asp Phe Gln Val Thr Ile Ala Glu Ile Leu Ile
1 5 10 15

Ile Ile Met Arg Thr Phe Arg Ile Ala Ile Trp Asn Leu Asp Val Ile
20 25 30

Ile Ser Ser Ile Val Arg Gln Leu Phe Lys Pro Leu Thr Lys Lys Asn
35 40 45

Tyr Ser Glu Leu Asp Asp Glu Glu Pro Met Glu Leu Asp Tyr Pro
50 55 60

<210> 68
<211> 122
<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 68

Met Lys Ile Ile Leu Phe Leu Thr Leu Ile Val Phe Thr Ser Cys Glu
1 5 10 15

Leu Tyr His Tyr Gln Glu Cys Val Arg Gly Thr Thr Val Leu Leu Lys
20 25 30

Glu Pro Cys Pro Ser Gly Thr Tyr Glu Gly Asn Ser Pro Phe His Pro
35 40 45

Leu Ala Asp Asn Lys Phe Ala Leu Thr Cys Thr Ser Thr His Phe Ala
50 55 60

Phe Ala Cys Ala Asp Gly Thr Arg His Thr Tyr Gln Leu Arg Ala Arg
65 70 75 80

Ser Val Ser Pro Lys Leu Phe Ile Arg Gln Glu Glu Val Gln Gln Glu
85 90 95

Leu Tyr Ser Pro Leu Phe Leu Ile Val Ala Ala Leu Val Phe Leu Ile
100 105 110

Leu Cys Phe Thr Ile Lys Arg Lys Thr Glu
115 120

<210> 69
<211> 44
<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 69

Met Asn Glu Leu Thr Leu Ile Asp Phe Tyr Leu Cys Phe Leu Ala Phe
1 5 10 15

Leu Leu Phe Leu Val Leu Ile Met Leu Ile Ile Phe Trp Phe Ser Leu
20 25 30

Glu Ile Gln Asp Leu Glu Glu Pro Cys Thr Lys Val
35 40

<210> 70
<211> 39
<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 70

Met Lys Leu Leu Ile Val Leu Thr Cys Ile Ser Leu Cys Ser Cys Ile
1 5 10 15

Cys Thr Val Val Gln Arg Cys Ala Ser Asn Lys Pro His Val Leu Glu
20 25 30

Asp Pro Cys Lys Val Gln His
35

<210> 71
<211> 84
<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 71

Met Cys Leu Lys Ile Leu Val Arg Tyr Asn Thr Arg Gly Asn Thr Tyr
1 5 10 15

Ser Thr Ala Trp Leu Cys Ala Leu Gly Lys Val Leu Pro Phe His Arg
20 25 30

Trp His Thr Met Val Gln Thr Cys Thr Pro Asn Val Thr Ile Asn Cys
35 40 45

Gln Asp Pro Ala Gly Gly Ala Leu Ile Ala Arg Cys Trp Tyr Leu His
50 55 60

Glu Gly His Gln Thr Ala Ala Phe Arg Asp Val Leu Val Val Leu Asn
65 70 75 80

Lys Arg Thr Asn

<210> 72
<211> 98
<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 72

Met Asp Pro Asn Gln Thr Asn Val Val Pro Pro Ala Leu His Leu Val
1 5 10 15

Asp Pro Gln Ile Gln Leu Thr Ile Thr Arg Met Glu Asp Ala Met Gly
20 25 30

Gln Gly Gln Asn Ser Ala Asp Pro Lys Val Tyr Pro Ile Ile Leu Arg
35 40 45

Leu Gly Ser Gln Leu Ser Leu Ser Met Ala Arg Arg Asn Leu Asp Ser
50 55 60

Leu Glu Ala Arg Ala Phe Gln Ser Thr Pro Ile Val Val Gln Met Thr
65 70 75 80

Lys Leu Ala Thr Thr Glu Glu Leu Pro Asp Glu Phe Val Val Val Thr
85 90 95

Ala Lys

<210> 73
<211> 70
<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 73

Met Leu Pro Pro Cys Tyr Asn Phe Leu Lys Glu Gln His Cys Gln Lys
1 5 10 15

Ala Ser Thr Gln Arg Glu Ala Glu Ala Ala Val Lys Pro Leu Leu Ala
20 25 30

Pro His His Val Val Ala Val Ile Gln Glu Ile Gln Leu Leu Ala Ala
35 40 45

Val Gly Glu Ile Leu Leu Leu Glu Trp Leu Ala Glu Val Val Lys Leu
50 55 60

Pro Ser Arg Tyr Cys Cys
65 70

<210> 74
<211> 6
<212> RNA
<213> Coronavirus

<400> 74
cuaaac 6

<210> 75
<211> 13
<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 75

Met Phe Ile Phe Leu Leu Phe Leu Thr Leu Thr Ser Gly
1 5 10

<210> 76
<211> 23
<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 76

Thr Ile Pro Leu Gln Ala Ser Leu Pro Phe Gly Trp Leu Val Ile Gly
1 5 10 15

Val Ala Phe Leu Ala Val Phe
20

<210> 77
<211> 23
<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 77

Phe Gln Phe Ile Cys Asn Leu Leu Leu Leu Phe Val Thr Ile Tyr Ser
1 5 10 15

His Leu Leu Leu Val Ala Ala
20

<210> 78

<211> 23
<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 78

Ala Gln Phe Leu Tyr Leu Tyr Ala Leu Ile Tyr Phe Leu Gln Cys Ile
1 5 10 15

Asn Ala Cys Arg Ile Ile Met
20

<210> 79
<211> 18
<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 79

Val Leu Leu Phe Leu Ala Phe Val Val Phe Leu Leu Val Thr Leu Ala
1 5 10 15

Ile Leu

<210> 80
<211> 23
<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 80

Leu Leu Glu Gln Trp Asn Leu Val Ile Gly Phe Leu Phe Leu Ala Trp
1 5 10 15

Ile Met Leu Leu Gln Phe Ala
20

<210> 81
<211> 23
<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 81

Leu Val Phe Leu Trp Leu Leu Trp Pro Val Thr Leu Ala Cys Phe Val
1 5 10 15

Leu Ala Ala Val Tyr Arg Ile
20

<210> 82
<211> 23

<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 82

Gly Gly Ile Ala Ile Ala Met Ala Cys Ile Val Gly Leu Met Trp Leu
1 5 10 15

Ser Tyr Phe Val Ala Ser Phe
20

<210> 83
<211> 20
<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 83

His Leu Val Asp Phe Gln Val Thr Ile Ala Glu Ile Leu Ile Ile Ile
1 5 10 15

Met Arg Thr Phe
20

<210> 84
<211> 15
<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 84

Met Lys Ile Ile Leu Phe Leu Thr Leu Ile Val Phe Thr Ser Cys
1 5 10 15

<210> 85
<211> 19
<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 85

Ser Pro Leu Phe Leu Ile Val Ala Ala Leu Val Phe Leu Ile Leu Cys
1 5 10 15

Phe Thr Ile

<210> 86
<211> 83
<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 86

Glu Leu Tyr His Tyr Gln Glu Cys Val Arg Gly Thr Thr Val Leu Leu
1 5 10 15

Lys Glu Pro Cys Pro Ser Gly Thr Tyr Glu Gly Asn Ser Pro Phe His
20 25 30

Pro Leu Ala Asp Asn Lys Phe Ala Leu Thr Cys Thr Ser Thr His Phe
35 40 45

Ala Phe Ala Cys Ala Asp Gly Thr Arg His Thr Tyr Gln Leu Arg Ala
50 55 60

Arg Ser Val Ser Pro Lys Leu Phe Ile Arg Gln Glu Glu Val Gln Gln
65 70 75 80

Glu Leu Tyr

<210> 87
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 87
caggaaacag ctatgacacc aagaacaagg ctctcca 37

<210> 88
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 88
caggaaacag ctatgacgat agggcctctt ccacaga 37

<210> 89
<211> 496
<212> DNA
<213> Severe acute respiratory syndrome virus

<220>
<221> misc_feature
<222> (11)..(11)
<223> n is a, c, g, or t

<400> 89
acctacccag ngaaaagcca accaacctcg atctcttgta gatctgttct ctaaacgaac 60

tttaaaatct gtgtagctgt cgctcggctg catgcctagt gcacctacgc agtataaaca 120
ataataaatt ttactgtcgt tgacaagaaa cgagtaactc gtccctcttc tgcagactgc 180
ttacggtttc gtccgtgttg cagtcgatca tcagcatacc taggtttcgt ccgggtgtga 240
ccgaaaggta agatggagag ccttgttctt ggtgtcaacg agaaaacaca cgtccaactc 300
agtttgcctg tccttcaggt tagagacgtg ctagtgcgtg gcttcgggga ctctgtggaa 360
gaggccctat cggaggcacg tgaacacctc aaaaatggca cttgtggtct agtagagctg 420
gaaaaaggcg tactgcccca gcttgaacag ccctatgtgt tcattaaacg ttctgatgcc 480
ttaagcacca atcacg 496

<210> 90
<211> 523
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 90
gtcgacaaca atttctgtgg cccagatggg taccctcttg attgcatcaa agattttctc 60
gcacgcgcgg gcaagtcaat gtgcactctt tccgaacaac ttgattacat cgagtcgaag 120
agaggtgtct actgctgccg tgaccatgag catgaaattg cctggttcac tgagcgctct 180
gataagagct acgagcacca gacacccttc gaaattaaga gtgccaagaa atttgacact 240
ttcaaagggg aatgcccaaa gtttgtgttt cctcttaact caaaagtcaa agtcattcaa 300
ccacgtgttg aaaagaaaaa gactgagggt ttcatggggc gtatacgctc tgtgtaccct 360
gttgcatctc cacaggagtg taacaatatg cacttgtcta ccttgatgaa atgtaatcat 420
tgcgatgaag tttcatggca gacgtgcgac tttctgaaag ccacttgtga acattgtggc 480
actgaaaatt tagttattga aggacctact acatgtgggt acc 523

<210> 91
<211> 324
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 91
cttaggtgac gagcttggca ctgatcccat tgaagattat gaacaaaact ggaacactaa 60
gcatggcagt ggtgcactcc gtgaactcac tcgtgagctc aatggaggtg cagtcactcg 120
ctatgtcgac aacaatttct gtggcccaga tgggtaccct cttgattgca tcaaagattt 180
tctcgcacgc gcgggcaagt caatgtgcac tctttccgaa caacttgatt acatcgagtc 240
gaagagaggt gtctactgct gccgtgacca tgagcatgaa attgcctggt tcactgagcg 300
ctcctgataa gagctacgag cacc 324

<210> 92
<211> 495
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 92
tgctataata agcgtgccta ctgggttcct cgtgctagtg ctgatattgg gctcaggcca 60

tactggcatt actggtgaca atgtggagac cttgaatgag gatctccttg agatactgag 120

tcgtgaacgt gttaacatta acattgttgg cgattttcat ttgaatgaag aggttgccat 180

cattttggca tctttctctg cttctacaag tgcctttatt gacactataa agagtcttga 240

ttacaagtct ttcaaaacca ttgttgagtc ctgcggtaac tataaagtta ccaagggaaa 300

gcccgtaaaa ggtgcttgga acattggaca acagagatca gttttaacac cactgtgtgg 360

ttttccctca caggctgctg gtgttatcag atcaattttt gcgcgcacac ttgatgcagc 420

aaaccactca attcctgatt tgcaaagagc agctgtcacc atacttgatg gtatttctga 480

acagtcatta cgtct 495

<210> 93
<211> 486
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 93
gccactcaaa cattgaaact cgactccgca agggaggtag gactagatgt tttggaggct 60

gtgtgtttgc ctatgttggc tgctataata agcgtgccta ctgggttcct cgtgctagtg 120

ctgatattgg ctcaggccat actggcatta ctggtgacaa tgtggagacc ttgaatgagg 180

atctccttga gatactgagt cgtgaacgtg ttaacattaa cattgttggc gattttcatt 240

tgaatgaaga ggttgccatc attttggcat ctttctctgc ttctacaagt gcctttattg 300

acactataaa gagtcttgat tacaagtctt tcaaaaccat tgttgagtcc tgcggtaact 360

ataaagttac caagggaaag cccgtaaaag gtgcttggaa cattggacaa cagagatcag 420

ttttaacacc actgtgtggt tttccctcac aggctgctgg tgttatcaga tcaatttttg 480

cgcgca 486

<210> 94
<211> 567
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 94
cactactgtg gaaaaactca ggcctatctt tgaatggatt gaggcgaaac ttagtgcagg 60

agttgaattt ctcaaggatg cttgggagat tctcaaattt ctcattacag gtgtttttga 120

catcgtcaag ggtcaaatac aggttgcttc agataacatc aaggattgtg taaaatgctt 180

cattgatgtt gttaacaagg cactcgaaat gtgcattgat caagtcacta tcgctggcgc 240

aaagttgcga tcactcaact taggtgaagt cttcatcgct caaagcaagg gactttaccg 300

tcagtgtata cgtggcaagg agcagctgca actactcatg cctcttaagg caccaaaaga 360

agtaaccttt cttgaaggtg attcacatga cacagtactt acctctgagg aggttgttct 420

caagaacggt gaactcgaag cactcgagac gcccgttgat agcttcacaa atggagctat 480

cgttggcaca ccagtctgtg taaatggcct catgctctta gagattaagg acaaagaaca 540

atactgcgca ttgtctcctg gtttact 567

<210> 95
<211> 516
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 95
gggagattct caaatttctc attacaggtg tttttgacat cgtcaagggt caaatacagg 60

ttgcttcaga taacatcaag gattgtgtaa aatgcttcat tgatgttgtt aacaaggcac 120

tcgaaatgtg cattgatcaa gtcactatcg ctggcgcaaa gttgcgatca ctcaacttag 180

gtgaagtctt catcgctcaa agcaagggac tttaccgtca gtgtatacgt ggcaaggagc 240

agctgcaact actcatgcct cttaaggcac caaaagaagt aacctttctt gaaggtgatt 300

cacatgacac agtacttacc tctgaggagg ttgttctcaa gaacggtgaa ctcgaagcac 360

tcgagacgcc cgttgatagc ttcacaaatg gagctatcgt tggcacacca gtctgtgtaa 420

atggcctcat gctcttagag attaaggaca aagaacaata ctgcgcattg tctcctggtt 480

tactggctac aaacaatgtc tttcgcttaa aagggg 516

<210> 96
<211> 448
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 96
agttcgagtt gaggaagaag aagaggaaga ctggctggat gatactactg agcaatcaga 60

gattgagcca gaaccagaac ctacacctga agaaccagtt aatcagttta ctggttattt 120

aaaacttact gacaatgttg ccattaaatg tgttgacatc gttaaggagg cacaaagtgc 180

taatcctatg gtgattgtaa atgctgctaa catacacctg aaacatggtg gtggtgtagc 240

aggtgcactc aacaaggcaa ccaatggtgc catgcaaaag gagagtgatg attacattaa 300

gctaaatggc cctcttacag taggagggtc ttgtttgctt tctggacata atcttgctaa 360

gaagtgtctg catgttgttg gacctaacct aaatgcaggt gaggacatcc agcttcttaa 420

ggcagcatat gaaaatttca attcacag 448

<210> 97
<211> 333
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 97
agaggatgat tatcaaggtc tccctctgga atttggtgcc tcagctgaaa cagttcgagt 60
tgaggaagaa gaagaggaag actggctgga tgatactact gagcaatcag agattgagcc 120
agaaccagaa cctacacctg aagaaccagt taatcagttt actggttatt taaaacttac 180
tgacaatgtt gccattaaat gtgttgacat cgttaaggag gcacaaagtg ctaatcctat 240
ggtgattgta aatgctgcta acatacacct gaaacatggt ggtggtgtag caggtgcact 300
caacaaggca accaatggtg ccatgcaaaa gga 333

<210> 98
<211> 399
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 98
gagatgctct caagagcttt gaagaaagtg ccagttgatg agtatataac cacgtaccct 60
ggacaaggat gtgctggtta tacacttgag gaagctaaga ctgctcttaa gaaatgcaaa 120
tctgcatttt atgtactacc ttcagaagca cctaatgcta aggaagagat tctaggaact 180
gtatcctgga atttgagaga aatgcttgct catgctgaag agacaagaaa attaatgcct 240
atatgcatgg atgttagagc cataatggca accatccaac gtaagtataa aggaattaaa 300
attcaagagg gcatcgttga ctatggtgtc cgattcttct tttatactag taaagagcct 360
gtagcttcta ttattacgaa gctgaactct ctaaatgag 399

<210> 99
<211> 437
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 99
agaaatctgt cgtacagaag cctgtcgatg tgaagccaaa aattaaggcc tgcattgatg 60
aggttaccac aacactggaa gaaactaagt ttcttaccaa taagttactc ttgtttgctg 120
atatcaatgg taagctttac catgattctc agaacatgct tagaggtgaa gatatgtctt 180
tccttgagaa ggatgcacct tacatggtag gtgatgttat cactagtggt gatatcactt 240
gtgttgtaat accctccaaa aaggctggtg gcactactga gatgctctca agagctttga 300
agaaagtgcc agttgatgag tatataacca cgtaccctgg acaaggatgt gctggttata 360

cacttgagga agctaagact gctcttaaga aatgcaaatc tgcatttttat gtactacctt 420

cagaagcacc taatgct 437

<210> 100
<211> 569
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 100
cctctatcgt attgacggag ctcaccttac aaagatgtca gagtacaaag gaccagtgac 60

tgatgttttc tacaaggaaa catcttacac tacaaccatc aagcctgtgt cgtataaact 120

cgatggagtt acttacacag agattgaacc aaaattggat gggtattata aaaaggataa 180

tgcttactat acagagcagc ctatagacct tgtaccaact caaccattac caaatgcgag 240

ttttgataat ttcaaactca catgttctaa cacaaaattt gctgatgatt taaatcaaat 300

gacaggcttc acaaagccag cttcacgaga gctatctgtc acattcttcc cagacttgaa 360

tggcgatgta gtggctattg actatagaca ctattcagcg agtttcaaga aaggtgctaa 420

attactgcat aagccaattg tttggcacat taaccaggct acaaccaaga caacgttcaa 480

accaaacact tggtgtttac gttgtctttg gagtacaaag ccagtagata cttcaaattc 540

atttgaagtt ctggcagtag aagacacat 569

<210> 101
<211> 187
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 101
tcagcagata cttcaaattc atttgaagtt ctggcagtag aagacacaca aggaatggac 60

aatcttgctt gtgaaagtca acaacccacc tctgaagaag tagtggaaaa tcctaccata 120

cagaaggaag tcatagagcg tgacgtgaaa actaccgaag ttgtaggcaa tgtcatactt 180

aaaccat 187

<210> 102
<211> 271
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 102
aaatgcgacg agtctgcttc taagtctgct tctgtgtact acagtcagct gatgtgccaa 60

cctattctgt tgcttgacca agctcttgta tcagacgttg gagatagtac tgaagtttcc 120

gttaagatgt ttgatgctta tgtcgacacc ttttcagcaa cttttagtgt tcctatggaa 180

aaacttaagg cacttgttgc tacagctcac agcgagttag caaagggtgt agctttagat 240

ggtgtccttt ctacattcgt gtcagctgcc c 271

<210> 103
<211> 363
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 103
catttcatca gcaattcttg gctcatgtgg tttatcatta gtattgtaca aatggcaccc 60

gtttctgcaa tggttaggat gtacatcttc tttgcttctt tctactacat atggaagagc 120

tatgttcata tcatggatgg ttgcacctct tcgacttgca tgatgtgcta taagcgcaat 180

cgtgccacac gcgttgagtg tacaactatt gttaatggca tgaagagatc tttctatgtc 240

tatgcaaatg gaggccgtgg cttctgcaag actcacaatt ggaattgtct caattgtgac 300

acattttgca ctggtagtac attcattagt gatgaagttg ctcgagattt gtcactccag 360

ttt 363

<210> 104
<211> 500
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 104
agagatcttg gcgcatgtat tgactgtaat gcaaggcata tcaatgccca aggtagcaaa 60

aagtcacaat gtttcactca tctggaatgt aaaagactac atgtctttat ctgaacagct 120

gcgtaaacaa attcgtagtg ctgccaagaa gaacaacata ccttttagac taacttgtgc 180

tacaactaga caggttgtca atgtcataac tactaaaatc tcactcaagg gtggtaagat 240

tgttagtact tgttttaaac ttatgcttaa ggccacatta ttgtgcgttc ttgctgcatt 300

ggtttgttat atcgttatgc cagtacatac attgtcaatc catgatggtt acacaaatga 360

aatcattggt tacaaagcca ttcaggatgg tgtcactcgt gacatcattt ctactgatga 420

ttgttttgca aataaacatg ctggttttga cgcatggttt agccagcgtg gtggttcata 480

caaaaatgac aaaagctgcc 500

<210> 105
<211> 537
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 105
cattgtcaat ccatgatggt tacacaaatg aaatcattgg ttacaaagcc attcaggatg 60

gtgtcactcg tgacatcatt tctactgatg attgttttgc aaataaacat gctggttttg 120

acgcatggtt tagccagcgt ggtggttcat acaaaaatga caaaagctgc cctgtagtag 180

ctgctatcat tacaagagag attggtttca tagtgcctgg cttaccgggt actgtgctga 240

gagcaatcaa tggtgacttc ttgcattttc tacctcgtgt ttttagtgct gttggcaaca 300

tttgctacac accttccaaa ctcattgagt atagtgattt tgctacctct gcttgcgttc 360

ttgctgctga gtgtacaatt tttaaggatg ctatgggcaa acctgtgcca tattgttatg 420

acactaattt gctagagggt tctatttctt atagtgagct tcgtccagac actcgttatg 480

tgcttatgga tggttccatc atacagtttc ctaacactta cctggagggg tctgtta 537

<210> 106
<211> 427
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 106
cacttttgtt tttgatgtct ttcactatac tctgtctggt accagcttac agctttctgc 60

cgggagtcta ctcagtcttt tacttgtact tgacattcta tttcaccaat gatgtttcat 120

tcttggctca ccttcaatgg tttgccatgt tttctcctat tgtgcctttt tggataacag 180

caatctatgt attctgtatt tctctgaagc actgccattg gttctttaac aactatctta 240

ggaaaagagt catgtttaat ggagttacat ttagtacctt cgaggaggct gctttgtgta 300

ccttttgct caacaaggaa atgtacctaa aattgcgtag cgagacactg ttgccactta 360

cacagtataa caggtatctt gctctatata acaagtacaa gtatttcagt ggagccttag 420

atactac 427

<210> 107
<211> 537
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 107
agtaacaact tttgatgctg agtactgtag acatggtaca tgcgaaaggt cagaagtagg 60

tatttgccta tctaccagtg gtagatgggt tcttaataat gagcattaca gagctctatc 120

aggagttttc tgtggtgttg atgcgatgaa tctcatagct aacatcttta ctcctcttgt 180

gcaacctgtg ggtgctttag atgtgtctgc ttcagtagtg gctggtggta ttattgccat 240

attggtgact tgtgctgcct actactttat gaaattcaga cgtgtttttg gtgagtacaa 300

ccatgttgtt gctgctaatg cacttttgtt tttgatgtct ttcactatac tctgtctggt 360

accagcttac agctttctgc cgggagtcta ctcagtcttt tacttgtact tgacattcta 420

tttcaccaat gatgtttcat tcttggctca ccttcaatgg tttgccatgt tttctcctat 480

tgtgcctttt tggataacag caatctatgt attctgtatt tctctgaagc actgcca 537

<210> 108
<211> 551
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 108
agtatactgt ccaagacatg tcatttgcac agcagaagac atgcttaatc ctaactatga 60

agatctgctc attcgcaaat ccaaccatag ctttcttgtt caggctggca atgttcaact 120

tcgtgttatt ggccattcta tgcaaaattg tctgcttagg cttaaagttg atacttctaa 180

ccctaagaca cccaagtata aatttgtccg tatccaacct ggtcaaacat tttcagttct 240

agcatgctac aatggttcac catctggtgt ttatcagtgt gccatgagac ctaatcatac 300

cattaaaggt tctttcctta atggatcatg tggtagtgtt ggttttaaca ttgattatga 360

ttgcgtgtct ttctgctata tgcatcatat ggagcttcca acaggagtac acgctggtac 420

tgacttagaa ggtaaattct atggtccatt tgttgacaga caaactgcac aggctgcagg 480

tacagacaca accataacat taaatgtttt ggcatggctg tatgctgctg ttatcaatgg 540

tgataggtgg t 551

<210> 109
<211> 593
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 109
acttagcaaa ggctctaaat gactttagca actcaggtgc tgatgttctc taccaaccac 60

cacagacatc aatcacttct gctgttctgc agagtggttt taggaaaatg gcattcccgt 120

caggcaaagt tgaagggtgc atggtacaag taacctgtgg aactacaact cttaatggat 180

tgtggttgga tgacacagta tactgtccaa gacatgtcat ttgcacagca gaagacatgc 240

ttaatcctaa ctatgaagat ctgctcattc gcaaatccaa ccatagcttt cttgttcagg 300

ctggcaatgt tcaacttcgt gttattggcc attctatgca aaattgtctg cttaggctta 360

aagttgatac ttctaaccct aagacaccca agtataaatt tgtccgtatc caacctggtc 420

aaacattttc agttctagca tgctacaatg gttcaccatc tggtgtttat cagtgtgcca 480

tgagacctaa tcataccatt aaaggttctt tccttaatgg atcatgtggt agtgttggtt 540

ttaacattga ttatgattgc gtgtctttct gctatatgca tcatatggag ctt 593

<210> 110
<211> 504
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 110

tgtgctgctt tgaaagagct gctgcagaat gggtatgaat ggtcgtacta tccttggtag 60

cactatttta gaagatgagt ttacaccatt tgatgttgtt agacaatgct ctggtgttac 120

cttccaaggg taagttcaag aaaattgtta agggcactca tcattggatg cttttaactt 180

tcttgacatc actattgatt cttgttcaaa gtacacagtg gtcactgttt ttctttgttt 240

acgagaatgc tttcttgcca tttactcttg gtattatggc aattgctgca tgtgctatgc 300

tgcttgttaa gcataagcac gcattcttgt gcttgtttct gttaccttct cttgcaacag 360

ttgcttactt taatatggtc tacatgcctg ctagctgggt gatgcgtatc atgacatggc 420

ttgaattggc tgacactagc ttgtctggtt ataggcttaa ggattgtgtt atgtatgctt 480

cagctttagt tttgcttatt ctca 504

<210> 111
<211> 298
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 111
taggcttaag gattgtgtta tgtatgcttc agctttagtt ttgcttattc tcatgacagc 60

tcgcactgtt tatgatgatg ctgctagacg tgtttggaca ctgatgaatg tcattacact 120

tgtttacaaa gtctactatg gtaatgcttt agatcaagct atttccatgt gggccttagt 180

tatttctgta acctctaact attctggtgt cgttacgact atcatgtttt tagctagagc 240

tatagtgttt gtgtgtgttg agtattaccc attgttattt attacctggc aacacctt 298

<210> 112
<211> 530
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 112
aaacaggcaa gatctgagga caagagggca aaagtaacta gtgctatgca aacaatgctc 60

ttcactatgc ttaggaagct tgataatgat gcacttaaca acattatcaa caatgcgcgt 120

gatggttgtg ttccactcaa catcatacca ttgactacag cagccaaact catggttgtt 180

gtccctgatt atggtaccta caagaacact tgtgatggta acacctttac atatgcatct 240

gcactctggg aaatccagca agttgttgat gcggatagca agattgttca acttagtgaa 300

attaacatgg acaattcacc aaatttggct tggcctctta ttgttacagc tctaagagcc 360

aactcagctg ttaaactaca gaataatgaa ctgagtccag tagcactacg acagatgtcc 420

tgtgcggctg gtaccacaca aacagcttgt actgatgaca atgcacttgc ctactataac 480

aattcgaagg gaggtaggtt tgtgctggca ttactatcag accaccaagc 530

<210> 113
<211> 605
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 113
gaagtcgttc tcaaaaagtt aaagaaatct ttgaatgtgg ctaaatctga gtttgaccgt 60

gatgctgcca tgcaacgcaa gttggaaaag atggcagatc aggctatgac ccaaatgtac 120

aaacaggcaa gatctgagga caagagggca aaagtaacta gtgctatgca aacaatgctc 180

ttcactatgc ttaggaagct tgataatgat gcacttaaca acattatcaa caatgcgcgt 240

gatggttgtg ttccactcaa catcatacca ttgactacag cagccaaact catggttgtt 300

gtccctgatt atggtaccta caagaacact tgtgatggta acacctttac atatgcatct 360

gcactctggg aaatccagca agttgttgat gcggatagca agattgttca acttagtgaa 420

attaacatgg acaattcacc aaatttggct tggcctctta ttgttacagc tctaagagcc 480

aactcagctg ttaaactaca gaataatgaa ctgagtccag tagcactacg acagatgtcc 540

tgtgcggctg gtaccacaca aacagcttgt actgatgaca atgcacttgc ctactataac 600

aattc 605

<210> 114
<211> 176
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 114
acactggtac aggacaggca attactgtaa caccagaagc taacatggac caagagtcct 60

ttggtggtgc ttcatgttgt ctgtattgta gatgccacat tgaccatcca aatcctaaag 120

gattctgtga cttgaaaggt aagtacgtcc aaatacctac cacttgtgct aatgat 176

<210> 115
<211> 516
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 115
actgtaacac cagaagctaa catggaccaa gagtcctttg gtggtgcttc atgttgtctg 60

tattgtagat gccacattga ccatccaaat cctaaaggat tctgtgactt gaaaggtaag 120

tacgtccaaa tacctaccac ttgtgctaat gacccagtgg gttttacact tagaaacaca 180

gtctgtaccg tctgcggaat gtggaaaggt tatggctgta gttgtgacca actccgcgaa 240

cccttgatgc agtctgcgga tgcatcaacg tttttaaacg ggtttgcggt gtaagtgcag 300

cccgtcttac accgtgcggc acaggcacta gtactgatgt cgtctacagg gcttttgata 360

tttacaacga aaaagttgct ggttttgcaa agttcctaaa aactaattgc tgtcgcttcc 420

aggagaagga tgaggaaggc aatttattag actcttactt tgtagttaag aggcatacta 480

tgtctaccta ccaacatgaa gagactattt ataact 516

<210> 116
<211> 366
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 116
accacttatt aagtgggatt tgctgaaata tgattttacg gaagagagac tttgtctctt 60

cgaccgttat tttaaatatt gggaccagac ataccatccc aattgtatta actgtttgga 120

tgataggtgt atccttcatt gtgcaaactg taatgtgtta ttttctgctg tgtttccacg 180

tacaagtttt ggaccactag taagaaaaat atttgtagat ggtgttcctt ttgttgtttc 240

aactggatac cattttcgtg agttaggagt cgtacataat caggatgtaa acttacatag 300

ctcgcgtctc agtttcaagg aacttttagt gtatgctgct gatccagcta tgcatgcagc 360

ttctgg 366

<210> 117
<211> 291
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 117
tgaaaaagtt gctggttttg caaagttcct aaaaactaat tgctgtcgct tccaggagaa 60

ggatgaggaa ggcaatttat tagactctta ctttgtagtt aagaggcata ctatgtctaa 120

ctaccaacat gaagagacta tttataactt ggttaaagat tgtccagcgg ttgctgtcca 180

tgacttttc aagtttagag tagatggtga catggtacca catatatcac gtcagcgtct 240

aactaaatac acaatggctg atttagtcta tgctctacgt cattttgatg a 291

<210> 118
<211> 480
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 118
gagtcccata tggatgctga tctcgcaaaa ccacttatta agtgggattt gctgaaatat 60

gattttacgg aagagagact ttgtctcttc gaccgttatt ttaaatattg ggaccagaca 120

taccatccca attgtattaa ctgtttggat gataggtgta tccttcattg tgcaaacttt 180

aatgtgttat tttctactgt gtttccacct acaagttttg gaccactagt aagaaaaata 240

tttgtagatg gtgttccttt tgttgtttca actggatacc attttcgtga gttaggagtc 300

gtacataatc aggatgtaaa cttacatagc tcgcgtctca gtttcaagga acttttagtg 360

tatgctgctg atccagctat gcatgcagct tctggcaatt tattgctaga taaacgcact 420

acatgctttt cagtagctgc actaacaaac aatgttgctt ttcaaactgt caaacccggt 480

<210> 119
<211> 405
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 119
aatgggaact ggtacgattt cggtgatttc gtacaagtag caccaggctg cggagttcct 60

attgtggatt catattactc attgctgatg cccatcctca ctttgactag ggcattggct 120

gctgagtccc atatggatgc tgatctcgca aaaccactta ttaagtgaga tttgctgaaa 180

tatgatttta cggaagagag actttgtctc ttcgaccgtt attttaaata ttgggaccag 240

acataccatc ccaattgtat taactgtttg gatgataggt gtatccttca ttgtgcaaac 300

tttaatgtgt tattttctac tgtgtttcca cctacaagct ttggaccact agtaagaaaa 360

atatttgtag atggtgttcc ttttgttgtt tcaactggat accat 405

<210> 120
<211> 562
<212> DNA
<213> Severe acute respiratory syndrome virus

<220>
<221> misc_feature
<222> (67)..(67)
<223> n is a, c, g, or t

<400> 120
ctattgatgc ttacccactt acaaaacatc ctaatcagga gtatgctgat gtctttcact 60

tgtattnaca atacattaga aagttacatg atgagcttac tggccacatg ttggacatgt 120

attccgtaat gctaactaat gataacacct cacggtactg ggaacctgag ttttatgagg 180

ctatgtacac accacataca gtcttgcagg ctgtaggtgc ttgtgtattg tgcaattcac 240

agacttcact tcgttgcggt gcctgtatta ggagaccatt cctatgttgc aagtgctgct 300

atgaccatgt catttcaaca tcacacaaat tagtgttgtc tgttaatccc tatgtttgca 360

atgccccagg ttgtgatgtc actgatgtga cacaactgta tctaggaggt atgagctatt 420

attgcaagtc acataagcct cccattagtt ttccattatg tgctaatggt caggtttttg 480

gtttatacaa aaacacatgt gtaggcagtg acaatgtcac tgacttcaat gcgatagcaa 540

catgtgattg gactaatgct gg 562

<210> 121

<211> 580
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 121
gctatgtaca caccacatac agtcttgcag gctgtaggtg cttgtgtatt gtgcaattca 60
cagacttcac ttcgttgcgg tgcctgtatt aggagaccat tcctatgttg caagtgctgc 120
tatgaccatg tcatttcaac atcacacaaa ttagtgttgt ctgttaatcc ctatgtttgc 180
aatgccccag gttgtgatgt cactgatgtg acacaactgt atctaggagg tatgagctat 240
tattgcaagt cacataagcc tcccattagt tttccattat gtgctaatgg tcaggttttt 300
ggtttataca aaaacacatg tgtaggcagt gacaatgtca ctgacttcaa tgcgatagca 360
acatgtgatt ggactaatgc tggcgattac atacttgcca acacttgtac tgagagactc 420
aagcttttcg cagcagaaac gctcaaagcc actgaggaaa catttaagct gtcatatggt 480
attgccactg tacgcgaagt actctctgac agagaattgc atctttcatg ggaggttgga 540
aaacctagac caccattgaa cagaaactat gtctttactg 580

<210> 122
<211> 610
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 122
tggtgatgct gttgtgtaca gaggtactac gacatacaag ttgaatgttg gtgattactt 60
tgtgttgaca tctcacactg taatgccact tagtgcacct actctagtgc cacaagagca 120
ctatgtgaga attactggct tgtacccaac actcaacatc tcagatgagt tttctagcaa 180
tgttgcaaat tatcaaaagg tcggcatgca aaagtactct acactccaag gaccacctgg 240
tactggtaag agtcattttg ccatcggact tgctctctat tacccatctg ctcgcatagt 300
gtatacggca tgctctcatg cagctgttga tgccctatgt gaaaaggcat taaaatattt 360
gcccatagat aaatgtagta gaatcatacc tgcgcgtgcg cgcgtagagt gttttgataa 420
attcaaagtg aattcaacac tagaacagta tgttttctgc actgtaaatg cattgccaga 480
aacaactgct gacattgtag tctttgatga aatctctatg gctactaatt atgacttgag 540
tgttgtcaat gctagacttc gtgcaaaaca ctacgtctat attggcgatc ctgctcaatt 600
accagccct 610

<210> 123
<211> 429
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 123

ccaacactca acatctcaga tgagttttct agcaatgttg caaattatca aaaggtcggc 60

atgcaaaagt actctacact ccaaggacca cctggtactg gtaagagtca ttttgccatc 120

ggacttgctc tctattaccc atctgctcgc atagtgtata cggcatgctc tcatgcagct 180

gttgatgccc tatgtgaaaa ggcattaaaa tatttgccca tagataaatg tagtagaatc 240

atacctgcgc gtgcgcgcgt agagtgtttt gataaattca aagtgaattc aacactagaa 300

cagtatgttt tctgcactgt aaatgcattg ccagaaacaa ctgctgacat tgtagtcttt 360

gatgaaatct ctatggctac taattatgac ttgagtgttg tcaatgctag acttcgtgca 420

aaacactac 429

<210> 124
<211> 486
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 124
caatgtggct atcacaaggg caaaaattgg cattttgtgc ataatgtctg atagagatct 60

ttatgacaaa ctgcaattta caagtctaga aataccacgt cgcaatgtgg ctacattaca 120

agcagaaaat gtaactggac tttttaagga ctgtagtaag atcattactg gtcttcatcc 180

tacacaggca cctacacacc tcagcgttga tataaagttc aagactgaag gattatgtgt 240

tgacatacca ggcataccaa aggacatgac ctaccgtaga ctcatctcta tgatgggttt 300

caaaatgaat taccaagtca atggttaccc taatatgttt atcacccgcg aagaagctat 360

tcgtcacgtt cgtgcgtgga ttggctttga tgtagagggc tgtcatgcaa ctagagatgc 420

tgtgggtact aacctacctc tccagctagg attttctaca ggtgttaact tagtagctgt 480

accgac 486

<210> 125
<211> 427
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 125
aaaggacatg acctaccgta gactcatctc tatgatgggt ttcaaaatga attaccaagt 60

caatggttac cctaatatgt ttatcacccg cgaagaagct attcgtcacg ttcgtgcgtg 120

gattggcttt gatgtagagg gctgtcatgc aactagagat gctgtgggta ctaacctacc 180

tctccagcta ggattttcta caggtgttaa cttagtagct gtaccgactg gttatgttga 240

cactgaaaat aacacagaat tcaccagagt taatgcaaaa cctccaccag gtgaccagtt 300

taaacatctt ataccactca tgtataaagg cttgccctgg aatgtagtgc gtattaagat 360

agtacaaatg ctcagtgata cactgaaagg attgtcagac agagtcgtgt tcgtcctttg 420

ggcgcat 427

<210> 126
<211> 392
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 126
atggaaatgc acatgtggct agttgtgatg ctatcatgac tagatgttta gcagtccatg 60
agtgctttgt taagcgcgtt gattggtctg ttgaataccc tattatagga gatgaactga 120
gggttaattc tgcttgcaga aaagtacaac acatggttgt gaagtctgca ttgcttgctg 180
ataagtttcc agttcttcat gacattggaa atccaaaggc tatcaagtgt gtgcctcagg 240
ctgaagtaga atggaagttc tacgatgctc agccatgtag tgacaaagct tacaaaatag 300
aggaactctt ctattcttat gctacacatc acgataaatt cactgatggt gtttgtttgt 360
tttggaattg taacgttgat cgttacccag cc 392

<210> 127
<211> 483
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 127
gcttcatcag atacttatgc ctgctggaat cattctgtgg gttttgacta tgtctataac 60
ccatttatga ttgatgttca gcagtggggc tttacgggta accttcagag taaccatgac 120
caacattgcc aggtacatgg aaatgcacat gtggctagtt gtgatgctat catgactaga 180
tgtttagcag tccatgagtg ctttgttaag cgcgttgatt ggtctgttga ataccctatt 240
ataggagatg aactgagggt taattctgct tgcagaaaag tacaacacat ggttgtgaag 300
tctgcattgc ttgctgataa gtttccagtt cttcatgaca ttggaaatcc aaaggctatc 360
aagtgtgtgc ctcaggctga agtagaatgg aagttctacg atgctcagcc atgtagtgac 420
aaagcttaca aaatagagga actcttctat tcttatgcta cacatcacga taaattcact 480
gat 483

<210> 128
<211> 326
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 128
tcaaagggac cagcacaagc tagcgtcaat ggagtcacat taattggaga atcagtaaaa 60
acacagttta actactttaa gaaagtagac ggcattattc aacagttgcc tgaaacctac 120
tttactcaga gcagagactt agaggatttt aagcccagat cacaaatgga aactgacttt 180

ctcgagctcg ctatggatga attcatacag cgatataagc tcgagggcta tgccttcgaa 240

cacatcgttt atggagattt cagtcatgga caacttggcg gtcttcattt aatgataggc 300

ttagccaagc gctcacaaga ttcact 326

<210> 129
<211> 457
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 129
acaccttcaa agggaccagc acaagctagc gtcaatggag tcacattaat tggagaatca 60

gtaaaaacac agtttaacta ctttaagaaa gtagacggca ttattcaaca gttgcctgaa 120

acctacttta ctcagagcag agacttagag gattttaagc ccagatcaca aatggaaact 180

gactttctcg agctcgctat ggatgaattc atacagcgat ataagctcga gggctatgcc 240

ttcgaacaca tcgtttatgg agatttcagt catggacaac ttggcggtct tcatttaatg 300

ataggcttag ccaagcgctc acaagattca ccacttaaat tagaggattt tatccctatg 360

gacagcacag tgaaaaatta cttcataaca gatgcgcaaa caggttcatc aaaatgtgtg 420

tgttctgtga ttgatctttt acttgatgac tttgtcg 457

<210> 130
<211> 493
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 130
cgcaaagtat actcaactgt gtcaatactt aaatacactt actttagctg taccctacaa 60

catgagagtt attcactttg gtgctggctc tgataaagga gttgcaccag gtacagctgt 120

gctcagacaa tggttgccaa ctggcacact acttgtcgat tcagatctta atgacttcgt 180

ctccgacgca gattctactt taattggaga ctgtgcaaca gtacatacgg ctaataaatg 240

ggaccttatt attagcgata tgtatgaccc taggaccaaa catgtgacaa aagagaatga 300

ctctaaagaa gggtttttca cttatctgtg tggatttata aagcaaaaac tagccctggg 360

tggttctata gctgtaaaga taacagagca ttcttggaat gctgaccttt acaagcttat 420

gggccatttc tcatggtgga cagcttttgt tacaaatgta aatgcatcat catcggaagc 480

atttttaatt ggg 493

<210> 131
<211> 490
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 131
acttaaatac acttacttta gctgtaccct acaacatgag agttattcac tttggtgctg 60
gctctgataa aggagttgca ccaggtacag ctgtgctcag acaatggttg ccaactggca 120
cactacttgt cgattcagat cttaatgact tcgtctccga cgcagattct actttaattg 180
gagactgtgc aacagtacat acggctaata aatgggacct tattattagc gatatgtatg 240
accctaggac caaacatgtg acaaaagaga atgactctaa agaagggttt ttcacttatc 300
tgtgtggatt tataaagcaa aaactagccc tgggtggttc tatagctgta aagataacag 360
agcattcttg gaatgctgac ctttacaagc ttatgggcca tttctcatgg tggacagctt 420
ttgttacaaa tgtaaatgca tcatcatcgg aagcattttt aattggggct aactatcttg 480
gcaagccgaa 490

<210> 132
<211> 550
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 132
taaggagaat caaatcaatg atatgattta ttctcttctg gaaaaaggta ggcttatcat 60
tagagaaaac aacagagttg tggtttcaag tgatattctt gttaacaact aaacgaacat 120
gtttattttc ttattatttc ttactctcac tagtggtagt gaccttgacc ggtgcaccac 180
ttttgatgat gttcaagctc ctaattacac tcaacatact tcatctatga ggggggttta 240
ctatcctgat gaaattttta gatcagacac tctttattta actcaggatt tatttcttcc 300
attttattct aatgttacag ggtttcatac tattaatcat acgtttggca accctgtcat 360
acctttaag gatggtattt attttgctgc cacagagaaa tcaaatgttg tccgtggttg 420
ggtttttggt tctaccatga acaacaagtc acagtcggtg attattatta acaattctac 480
taatgttgtt atacgagcat gtaactttga attgtgtgac aaccctttct ttgctgtttc 540
taaacccata 550

<210> 133
<211> 490
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 133
acttaaatac acttacttta gctgtaccct acaacatgag agttattcac tttggtgctg 60
gctctgataa aggagttgca ccaggtacag ctgtgctcag acaatggttg ccaactggca 120
cactacttgt cgattcagat cttaatgact tcgtctccga cgcagattct actttaattg 180
gagactgtgc aacagtacat acggctaata aatgggacct tattattagc gatatgtatg 240

accctaggac caaacatgtg acaaaagaga atgactctaa agaagggttt ttcacttatc 300

tgtgtggatt tataaagcaa aaactagccc tgggtggttc tatagctgta aagataacag 360

agcattcttg gaatgctgac ctttacaagc ttatgggcca tttctcatgg tggacagctt 420

ttgttacaaa tgtaaatgca tcatcatcgg aagcattttt aattggggct aactatcttg 480

gcaagccgaa 490

<210> 134
<211> 550
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 134
taaggagaat caaatcaatg atatgattta ttctcttctg gaaaaaggta ggcttatcat 60

tagagaaaac aacagagttg tggtttcaag tgatattctt gttaacaact aaacgaacat 120

gtttattttc ttattatttc ttactctcac tagtggtagt gaccttgacc ggtgcaccac 180

ttttgatgat gttcaagctc ctaattacac tcaacatact tcatctatga ggggggttta 240

ctatcctgat gaaattttta gatcagacac tctttattta actcaggatt tatttcttcc 300

attttattct aatgttacag ggtttcatac tattaatcat acgtttggca accctgtcat 360

acctttaag gatggtattt attttgctgc cacagagaaa tcaaatgttg tccgtggttg 420

ggtttttggt tctaccatga acaacaagtc acagtcggtg attattatta acaattctac 480

taatgttgtt atacgagcat gtaactttga attgtgtgac aaccctttct ttgctgtttc 540

taaacccata 550

<210> 135
<211> 400
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 135
atcaatgata tgatttattc tcttctggaa aaaggtaggc ttatcattag agaaaacaac 60

agagttgtgg tttcaagtga tattcttgtt aacaactaaa cgaacatgtt tattttctta 120

ttatttctta ctctcactag tggtagtgac cttgaccggt gcaccacttt tgatgatgtt 180

caagctccta attacactca acatacttca tctatgaggg gggtttacta tcctgatgaa 240

atttttagat cagacactct ttatttaact caggatttat ttcttccatt ttattctaat 300

gttacagggt ttcatactat taatcatacg tttggcaacc ctgtcatacc ttttaaggat 360

ggtatttatt ttgctgccac agagaaatca aatgttgtcc 400

<210> 136
<211> 288

<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 136
tgatctttgc ttctccaatg tctatgcaga ttctttggta gtcaagggag atgatgtaag 60

acaaatagcg ccaggacaaa ctggtgttat tgctgattat aattataaat tgccagatga 120

tttcatgggt tgtgtccttg cttggaatac taggaacatt gatgctactt caactggtaa 180

ttataattat aaatataggt atcttagaca tggcaagctt aggccctttg agagagacat 240

atctaatgtg cctttctcca cctgatggca aaccttgcac cccacctg 288

<210> 137
<211> 411
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 137
ctttgagaga gacatatcta atgtgccttt ctcccctgat ggcaaacctt gcaccccacc 60

tgctcttaat tgttattggc cattaaatga ttatggtttt tacaccacta ctggcattgg 120

ctaccaacct tacagagttg tagtactttc ttttgaactt ttaaatgcac cggccacggt 180

ttgtggacca aaattatcca ctgaccttat taagaaccag tgtgtcaatt ttaattttaa 240

tggactcact ggtactggtg tgttaactcc ttcttcaaag agatttcaac catttcaaca 300

aattttgccg tgatgtttct gatttcactg attccgttcg agatcctaaa acatctgaaa 360

tattagacat ttcaccctgc gcttttgggg gtgtaagtgt aattacacct g 411

<210> 138
<211> 357
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 138
tggaaatatt ttggtggttt taatttttca caaatattac ctgaccctct aaagccaact 60

aagaggtctt ttattgagga cttgctcttt aataaggtga cactcgctga tgctggcttc 120

atgaagcaat atggcgaatg cctaggtgat attaatgcta gagatctcat ttgtgcgcag 180

aagttcaatg gacttacagt gttgccacct ctgctcactg atgatatgat tgctgcctac 240

actgctgctc tagttagtgg tactgccact gctggatgga catttggtgc tggcgctgct 300

cttcaaatac cttttgctat gcaaatggca tataggttca atggcattgg agttact 357

<210> 139
<211> 434
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 139

caatatggcg aatgcctagg tgatattaat gctagagatc tcatttgtgc gcagaagttc 60

aatggactta cagtgttgcc acctctgctc actgatgata tgattgctgc ctacactgct 120

gctctagtta gtggtactgc cactgctgga tggacatttg gtgctggcgc tgctcttcaa 180

ataccttttg ctatgcaaat ggcatatagg ttcaatggca ttggagttac ccaaaatgtt 240

ctctatgaga accaaaaaca aatcgccaac caatttaaca aggcgattag tcaaattcaa 300

gaatcactta caacaacatc aactgcattg ggcaagctgc aagacgttgt taaccagaat 360

gctcaagcat taaacacact tgttaaacaa cttagctcta attttggtgc aatttcaagt 420

gtgctaaatg atat 434

<210> 140
<211> 557
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 140
acagacaata catttgtctc aggaaattgt gatgtcgtta ttggcatcat taacaacaca 60

gtttatgatc ctctgcaacc tgagcttgac tcattcaaag aagagctgga caagtacttc 120

aaaaatcata catcaccaga tgttgatctt ggcgacattt caggcattaa cgcttctgtc 180

gtcaacattc aaaaagaaat tgaccgcctc aatgaggtcg ctaaaaattt aaatgaatca 240

ctcattgacc ttcaagaatt gggaaaatat gagcaatata ttaaatggcc ttggtatgtt 300

tggctcggct tcattgctgg actaattgcc atcgtcatgg ttacaatctt gctttgttgc 360

atgactagtt gttgcagttg cctcaagggt gcatgctctt gtggttcttg ctgcaagttt 420

gatgaggatg actctgagcc agttctcaag ggtgtcaaat tacattacac ataaacgaac 480

ttatggattt gtttatgaga ttttttactc ttagatcaat tactgcacag ccagtaaaaa 540

ttgacaatgc ttctcct 557

<210> 141
<211> 530
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 141
atgtttggct cggcttcatt gctggactaa ttgccatcgt catggttaca atcttgcttt 60

gttgcatgac tagttgttgc agttgcctca agggtgcatg ctcttgtggt tcttgctgca 120

agtttgatga ggatgactct gagccagttc tcaagggtgt caaattacat tacacataaa 180

cgaacttatg gatttgttta tgagattttt tactcttaga tcaattactg cacagccagt 240

aaaaattgac aatgcttctc ctgcaagtac tgttcatgct acagcaacga taccgctaca 300

agcctcactc cctttcggat ggcttgttat tggcgttgca tttcttgctg tttttcagag 360

cgctaccaaa ataattgcgc tcaataaaag atggcagcta gccctttata agggcttcca 420

gttcatttgc aatttactgc tgctatttgt taccatctat tcacatcttt tgcttgtcgc 480

tgcaggtatg gaggcgcaat ttttgtacct ctatgccttg atatattttc 530

<210> 142
<211> 320
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 142
ttgctcgtac ccgctcaatg tggtcattca acccagaaac aaacattctt ctcaatgtgc 60

ctctccgggg gacaattgtg accagaccgc tcatggaaag tgaacttgtc attggtgctg 120

tgatcattcg tggtcacttg cgaatggccg gacactccct agggcgctgt gacattaagg 180

acctgccaaa agagatcact gtggctacat cacgaacgct ttcttattac aaattaggag 240

cgtcgcagcg tgtaggcact gattcaggtt ttgctgcata caaccgctac cgtattggaa 300

actataaatt aaatacagac 320

<210> 143
<211> 417
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 143
cgaacttatg tactcattcg tttcggaaga aacaggtacg ttaatagtta atagcgtact 60

tctttttctt gctttcgtgg tattcttgct agtcacacta gccatcctta ctgcgcttcg 120

attgtgtgcg tactgctgca atattgttaa cgtgagttta gtaaaaccaa cggtttacgt 180

ctactcgcgt gttaaaaatc tgaactcttc tgaaggagtt cctgatcttc tggtctaaac 240

gaactaacta ttattattat tctgtttgga actttaacat tgcttatcat ggcagacaac 300

ggtactatta ccgttgagga gcttaaacaa ctcctggaac aatggaacct agtaataggt 360

ttcctattcc tagcctggat tatgttacta caatttgcct attctaatcg gaacagg 417

<210> 144
<211> 516
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 144
cttgtcattg gtgctgtgat cattcgtggt cacttgcgaa tggccggaca ctccctaggg 60

cgctgtgaca ttaaggacct gccaaaagag atcactgtgg ctacatcacg aacgctttct 120

tattacaaat taggagcgtc gcagcgtgta ggcactgatt caggttttgc tgcatacaac 180

cgctaccgta ttggaaacta taaattaaat acagaccacg ccggtagcaa cgacaatatt 240

gctttgctag tacagtaagt gacaacagat gtttcatctt gttgacttcc aggttacaat 300

agcagagata ttgattatca ttatgaggac tttcaggatt gctatttgga atcttgacgt 360

tataataagt tcaatagtga gacaattatt taagcctcta actaagaaga attattcgga 420

gttagatgat gaagaaccta tggagttaga ttatccataa aacgaacatg aaaattattc 480

tcttcctgac attgatttta tttacatctt gcgagc 516

<210> 145
<211> 310
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 145
cgatgtttca tcttgttgac ttccaggtta caatagcaga gatattgatt atcattatga 60

ggactttcag gattgctatt tggaatcttg acgttataat aagttcaata gtgagacaat 120

tatttaagcc tctaactaag aagaattatt cggagttaga tgatgaagaa cctatggagt 180

tagattatcc ataaaacgaa catgaaaatt attctcttcc tgacattgat tgtatttaca 240

tcttgcgagc tatatcacta tcaggagtgt gttagaggta cgactgtact actaaaagaa 300

ccttgcccat 310

<210> 146
<211> 556
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 146
agaaagacag aatgaatgag ctcactttaa ttgacttcta tttgtgcttt ttagcctttc 60

tgctattcct tgttttaata atgcttatta tattttggtt ttcactcgaa atccaggatc 120

tagaagaacc ttgtaccaaa gtctaaacga acatgaaact tctcattgtt ttgacttgta 180

tttctctatg cagttgcata tgcactgtag tacagcgctg tgcatctaat aaacctcatg 240

tgcttgaaga tccttgtaag gtacaacact aggggtaata cttatagcac tgcttggctt 300

tgtgctctag gaaaggtttt acctttttcat agatggcaca ctatggttca aacatgcaca 360

cctaatgtta ctatcaactg tcaagatcca gctggtggtg cgcttatagc taggtgttgg 420

taccttcatg aaggtcacca aactgctgca tttagagacg tacttgttgt tttaaataaa 480

cgaacaaatt aaaatgtctg ataatggacc ccaatcaaac caacgtagtg ccccccgcat 540

tacatttggt ggaccc 556

<210> 147
<211> 110
<212> DNA

<213> Severe acute respiratory syndrome virus

<400> 147
acgaacatga aaattattct cttcctgaca ttgattgtat ttacatcttg cgagctatat 60

cactatcagg agtgtgttag aggtacgact gtactactaa aagaaccttg 110

<210> 148
<211> 363
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 148
gcatttagag acgtacttgt tgttttaaat aaacgaacaa attaaaatgt ctgataatgg 60

acctcaatca agccaacgta gtgccccccg cattacattt ggtggaccca cagattcaac 120

tgacaataac cagaatggag gacgcaatgg ggcaaggcca aaacagcgcc gaccccaagg 180

tttacccaat aatactgcgt cttggttcac agctctcact cagcatggca aggaggaact 240

tagattccct cgaggccagg gcgttccaat caacaccaat agtggtccag atgaccaaat 300

tggctactac cgaagagcta cccgacgagt tcgtggtggt gacggcaaaa tgaaagagct 360

cag 363

<210> 149
<211> 294
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 149
ctatcagctg cgtgcaagat cagtttcacc aaaacttttc atcagacaag aggaggttca 60

acaagagctc tactcgccac tttttctcat tgttgctgct ctagtatttt taatactttg 120

cttcaccatt aagagaaaga cagaatgaat gagctcactt taattgactt ctatttgtgc 180

tttttagcct ttctgctatt ccttgtttta ataatgctta ttatattttg gttttcactc 240

gaaatccagg atctagaaaa accttgtacc aaaggctaaa cgaacatgaa actt 294

<210> 150
<211> 504
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 150
caaactgctg catttagaga cgtacttgtt gtttaaataa acgaacaaat taaaatgtct 60

gataatggac cccaatcaaa ccaacgtagt gcccccccgca ttacatttgg tggacccaca 120

gattcaactg acaataacca gaatggagga cgcaatgggg caaggccaaa acagcgccga 180

ccccaaggtt tacccaataa tactgcgtct tggttcacag ctctcactca gcatggcaag 240

gaggaactta gattccctcg aggccagggc gttccaatca acaccaatag tggtccagat 300

gaccaaattg gctactaccg aagagctacc cgacgagttc gtggtggtga cggcaaaatg 360

aaagagctca gccccagatg gtacttctat tacctaggaa ctggcccaga agcttcactt 420

ccctacggcg ctaacaaaga aggcatcgta tgggttgcaa ctgagggagc cttgaataca 480

cccaaagacc acattggcac ccgt 504

<210> 151
<211> 474
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 151
ctcgccactt tttctcattg ttgctgctct agtattttta atactttgct tcaccattaa 60

gagaaagaca gaatgaatga gctcacttta attgacttct atttgtgctt tttagccttt 120

ctgctattcc ttgttttaat aatgcttatt atattttggt tttcactcga aatccaggat 180

ctagaagaac cttgtaccaa agtctaaacg aacatgaaac ttctcattgt tttgacttgt 240

atttctctat gcagttgcat atgcactgta gtacagcgct gtgcatctaa taaacctcat 300

gtgcttgaag atccttgtaa ggtacaacac taggggtaat acttatagca ctgcttggct 360

ttgtgctcta ggaaaggttt taccttttca tagatggcac actatggttc aaacatgcac 420

acctaatgtt actatcaact gtcaagatcc agctggtggt gcgcttatag ctag 474

<210> 152
<211> 516
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 152
cattaagaga aagacagaat gaatgagctc actttaattg acttctattt gtgcttttta 60

gcctttctgc tattccttgt tttaataatg cttattatat tttggttttc actcgaaatc 120

caggatctag aagaaccttg taccaaagtc taaacgaaca tgaaacttct cattgttttg 180

acttgtattt ctctatgcag ttgcatatgc actgtagtac agcgctgtgc atctaataaa 240

cctcatgtgc ttgaagatcc ttgtaaggta caacactagg ggtaatactt atagcactgc 300

ttggctttgt gctctaggaa aggttttacc ttttcataga tggcacacta tggttcaaac 360

atgcacacct aatgttacta tcaactgtca agatccagct ggtggtgcgc ttatagctag 420

gtgttggtac cttcatgaag gtcaccaaac tgctgcattt agagacgtac ttgttgtttt 480

aaataaacga acaaattaaa atgtctgata atggac 516

<210> 153
<211> 451
<212> DNA

<213> Severe acute respiratory syndrome virus

<400> 153
ccaaggttta cccaataata ctgcgtcttg gttcacagct ctcactcagc atggcaagga 60
ggaacttaga ttccctcgag gccagggcgt tccaatcaac accaatagtg gtccagatga 120
ccaaattggc tactaccgaa gagctacccg acgagttcgt ggtggtgacg gcaaaatgaa 180
agagctcagc cccagatggt acttctatta cctaggaact ggcccagaag cttcacttcc 240
ctacggcgct aacaaagaag gcatcgtatg ggttgcaact gagggagcct tgaatacacc 300
caaagaccac attggcaccc gcaatcctaa taacaatgct gccaccgtgc tacaacttcc 360
tcaaggaaca acattgccaa aaggcttcta cgcagaggga agcagaggcg gcagtcaagc 420
ctcttctcgc tcctcatcac gtagtcgcgg t 451

<210> 154
<211> 495
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 154
gatgaagctc agcctttgcc gcagagacaa aagaagcagc ccactgtgac tcttcttcct 60
gcggctgaca tggatgattt ctccagacaa cttcaaaatt ccatgagtgg agcttctgct 120
gattcaactc aggcataaac actcatgatg accacacaag gcagatgggc tatgtaaacg 180
ttttcgcaat tccgtttacg atacatagtc tactcttgtg cagaatgaat tctcgtaact 240
aaacagcaca agtaggttta gttaacttta atctcacata gcaatctttc atcaatgtgt 300
aacattaggg aggacttgaa agagccacca cattttcatc gaggccacgc ggagtacgat 360
cgagggtaca gtgaataatg ctagggagag ctgcctatat ggaagagccc taatgtgtaa 420
aattaatttt agtagtgcta tccccatgtg attttaatag cttcttagga gaatgacaaa 480
aaaaaaaaaa aaaaa 495

<210> 155
<211> 512
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 155
acaaggccaa actgtcacta agaaatctgc tgctgaggca tctaaaaagc ctcgccaaaa 60
acgtactgcc acaaaacagt acaacgtcac tcaagcattt gggagacgtg gtccagaaca 120
aacccaagga aatttcgggg accaagacct aatcagacaa ggaactgatt acaaacattg 180
gccgcaaatt gcacaatttg ctccaagtgc ctctgcattc tttggaatgt cacgcattgg 240
catggaagtc acaccttcgg gaacatggct gacttatcat ggagccatta aattggatga 300

caaagatcca caattcaaag acaacgtcat actgctgaac aagcacattg acgcatacaa 360

aacattccca ccaacagagc ctaaaaagga caaaaagaaa aagactgatg aagctcagcc 420

tttgccgcag agacaaaaga agcagcccac tgtgactctt cttcctgcgg ctgatatgga 480

tgatttctcc agacaacttc aaaattccat ga 512

<210> 156
<211> 442
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 156
tgtgactctt cttcctgcgg ctgatatgga tgtttctcca gacaacttca aaattccatg 60

agtggagctt ctgctgattc aactcaggca taaacactca tgatgaccac acaaggcaga 120

tgggctatgt aaacgttttc gcaattccgt ttacgataca tagtctactc ttgtgcagaa 180

tgaattctcg taactaaaca gcacaagtag gtttagttaa ctttaatctc acatagcaat 240

ctttaatcaa tgtgtaacat tagggaggac ttgaaagagc caccacattt tcatcgaggc 300

cacgcggagt acgatcgagg gtacagtgaa taatgctagg gagagctgcc tatatggaag 360

agccctaatg tgtaaaatta attttagtag tgctatcccc atgtgatttt aatagcttct 420

taggagaatg acaaaaaaaa aa 442

<210> 157
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 157
atgaattacc aagtcaatgg ttac 24

<210> 158
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 158
gaagctattc gtcacgttcg 20

<210> 159
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 159
ctgtagaaaa tcctagctgg ag 22

<210> 160
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 160
cataaccagt cggtacagct a 21

<210> 161
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 161
ttatcacccg cgaagaagct 20

<210> 162
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 162
ctctagttgc atgacagccc tc 22

<210> 163
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 163
tcgtgcgtgg attggctttg atgt 24

<210> 164
<211> 24
<212> DNA
<213> Artificial Sequence

<220>

<223> Primer

<400> 164
gggttgggac tatcctaagt gtga 24

<210> 165
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 165
taacacacaa acaccatcat ca 22

<210> 166
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 166
ggttgggact atcctaagtg tga 23

<210> 167
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 167
ccatcatcag atagaatcat cata 24

<210> 168
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 168
cctctcttgt tcttgctcgc a 21

<210> 169
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 169
tatagtgagc cgccacacat g 21

<210> 170
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<220>
<221> misc_feature
<222> (12)..(12)
<223> n is a, c, g, or t

<400> 170
taacacacaa cnccatcatc a 21

<210> 171
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 171
ctaacatgct taggataatg g 21

<210> 172
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 172
gcctctcttg ttcttgctcg c 21

<210> 173
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 173
caggtaagcg taaaactcat c 21

<210> 174
<211> 17

<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 174
tacacacctc agcgttg 17

<210> 175
<211> 16
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 175
cacgaacgtg acgaat 16

<210> 176
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 176
gccggagctc tgcagaattc 20

<210> 177
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 177
caggaaacag ctatgacttg catcaccact agttgtgcca ccaggtt 47

<210> 178
<211> 46
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 178
tgtaaaacga cggccagttg atgggatggg actatcctaa gtgtga 46

<210> 179
<211> 20
<212> DNA

<213> Artificial Sequence

<220>
<223> Primer

<400> 179
gcataggcag tagttgcatc 20

<210> 180
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> ATP Binding Domain

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = A or G

<220>
<221> misc_feature
<222> (2)..(5)
<223> Xaa can be any naturally occurring amino acid

<220>
<221> MISC_FEATURE
<222> (8)..(8)
<223> Xaa = S or T

<400> 180

Xaa Xaa Xaa Xaa Xaa Gly Lys Xaa
1 5

<210> 181
<211> 23
<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 181

Trp Tyr Val Trp Leu Gly Phe Ile Ala Gly Leu Ile Ala Ile Val Met
1 5 10 15

Val Thr Ile Leu Leu Cys Cys
20

<210> 182
<211> 16
<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 182

Met Asp Leu Phe Met Arg Phe Phe Thr Leu Arg Ser Ile Thr Ala Gln
1 5 10 15

<210> 183
<211> 150
<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 183

Met Arg Cys Trp Leu Cys Trp Lys Cys Lys Ser Lys Asn Pro Leu Leu
1 5 10 15

Tyr Asp Ala Asn Tyr Phe Val Cys Trp His Thr His Asn Tyr Asp Tyr
20 25 30

Cys Ile Pro Tyr Asn Ser Val Thr Asp Thr Ile Val Val Thr Glu Gly
35 40 45

Asp Gly Ile Ser Thr Pro Lys Leu Lys Glu Asp Tyr Gln Ile Gly Gly
50 55 60

Tyr Ser Glu Asp Arg His Ser Gly Val Lys Asp Tyr Val Val Val His
65 70 75 80

Gly Tyr Phe Thr Glu Val Tyr Tyr Gln Leu Glu Ser Thr Gln Ile Thr
85 90 95

Thr Asp Thr Gly Ile Glu Asn Ala Thr Phe Phe Ile Phe Asn Lys Leu
100 105 110

Val Lys Asp Pro Pro Asn Val Gln Ile His Thr Ile Asp Gly Ser Ser
115 120 125

Gly Val Ala Asn Pro Ala Met Asp Pro Ile Tyr Asp Glu Pro Thr Thr
130 135 140

Thr Thr Ser Val Pro Leu
145 150

<210> 184
<211> 20
<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 184

Met Met Pro Thr Thr Leu Phe Ala Gly Thr His Ile Thr Met Thr Thr
1 5 10 15

Val Tyr His Ile
20

<210> 185
<211> 42
<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 185

Thr Ala Leu Arg Leu Cys Ala Tyr Cys Cys Asn Ile Val Asn Val Ser
1 5 10 15

Leu Val Lys Pro Thr Val Tyr Val Tyr Ser Arg Val Lys Asn Leu Asn
20 25 30

Ser Ser Glu Gly Val Pro Asp Leu Leu Val
35 40

<210> 186
<211> 39
<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 186

Met Ala Asp Asn Gly Thr Ile Thr Val Glu Glu Leu Lys Gln Leu Leu
1 5 10 15

Glu Gln Trp Asn Leu Val Ile Gly Phe Leu Phe Leu Ala Trp Ile Met
20 25 30

Leu Leu Gln Phe Ala Tyr Ser
35

<210> 187
<211> 100
<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 187

Pro Leu Arg Gly Thr Ile Val Thr Arg Pro Leu Met Glu Ser Glu Leu
1 5 10 15

Val Ile Gly Ala Val Ile Ile Arg Gly His Leu Arg Met Ala Gly His
20 25 30

Ser Leu Gly Arg Cys Asp Ile Lys Asp Leu Pro Lys Glu Ile Thr Val
35 40 45

Ala Thr Ser Arg Thr Leu Ser Tyr Tyr Lys Leu Gly Ala Ser Gln Arg
50 55 60

Val Gly Thr Asp Ser Gly Phe Ala Ala Tyr Asn Arg Tyr Arg Ile Gly
65 70 75 80

Asn Tyr Lys Leu Asn Thr Asp His Ala Gly Ser Asn Asp Asn Ile Ala
85 90 95

Leu Leu Val Gln
100

<210> 188
<211> 23
<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 188

Phe Tyr Leu Cys Phe Leu Ala Phe Leu Leu Phe Leu Val Leu Ile Met
1 5 10 15

Leu Ile Ile Phe Trp Phe Ser
20

<210> 189
<211> 19
<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 189

Leu Leu Ile Val Leu Thr Cys Ile Ser Leu Cys Ser Cys Ile Cys Thr
1 5 10 15

Val Val Gln

<210> 190
<211> 24
<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 190

Ile Cys Thr Val Val Gln Arg Cys Ala Ser Asn Lys Pro His Val Leu
1 5 10 15

Glu Asp Pro Cys Lys Val Gln His
20

<210> 191
<211> 22
<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 191

Cys Ile Cys Thr Val Val Gln Arg Cys Ala Ser Asn Lys Pro His Val
1 5 10 15

Leu Glu Asp Pro Cys Lys
20

<210> 192
<211> 22
<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 192

Val Val Ala Val Ile Gln Glu Ile Gln Leu Leu Ala Ala Val Gly Glu
1 5 10 15

Ile Leu Leu Leu Glu Trp
20

<210> 193
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Linker

<400> 193
aattcgcggc cgcgtcgac 19

<210> 194
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Linker

<400> 194
gtcgacgcgg ccgcg 15

<210> 195
<211> 19
<212> DNA
<213> Artificial Sequence

<220>

<223> Primer

<400> 195
aattcgcggc cgcgtcgac 19

<210> 196
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 196
ggcctcttcg ctattacgc 19

<210> 197
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 197
tgcaggtcga ctctagagga t 21

<210> 198
<211> 410
<212> PRT
<213> Avian infectious bronchitis virus

<400> 198

Met Ala Ser Gly Lys Ala Ala Gly Lys Thr Asp Ala Pro Ala Pro Val
1 5 10 15

Ile Lys Leu Gly Gly Pro Lys Pro Pro Lys Val Gly Ser Ser Gly Asn
20 25 30

Ala Ser Trp Phe Gln Ala Ile Lys Ala Lys Lys Leu Asn Thr Pro Pro
35 40 45

Pro Lys Phe Glu Gly Ser Gly Val Pro Asp Asn Glu Asn Ile Lys Pro
50 55 60

Ser Gln Gln His Gly Tyr Trp Arg Arg Gln Ala Arg Phe Lys Pro Gly
65 70 75 80

Lys Gly Gly Arg Lys Pro Val Pro Asp Ala Trp Tyr Phe Tyr Tyr Thr
85 90 95

Gly Thr Gly Pro Ala Ala Asp Leu Asn Trp Gly Asp Thr Gln Asp Gly
100 105 110

Ile Val Trp Val Ala Ala Lys Gly Ala Asp Thr Lys Ser Arg Ser Asn
115 120 125

Gln Gly Thr Arg Asp Pro Asp Lys Phe Asp Gln Tyr Pro Leu Arg Phe
130 135 140

Ser Asp Gly Gly Pro Asp Gly Asn Phe Arg Trp Asp Phe Ile Pro Leu
145 150 155 160

Lys Asn Arg Gly Arg Ser Gly Arg Ser Thr Ala Ala Ser Ser Ala Ala
165 170 175

Ala Ser Arg Ala Pro Ser Arg Glu Gly Ser Arg Gly Arg Arg Ser Asp
180 185 190

Ser Gly Asp Asp Leu Ile Ala Arg Ala Ala Lys Ile Ile Gln Asp Gln
195 200 205

Gln Lys Lys Gly Ser Arg Ile Thr Lys Ala Lys Ala Asp Glu Met Ala
210 215 220

His Arg Arg Tyr Cys Lys Arg Thr Ile Pro Pro Asn Tyr Arg Val Asp
225 230 235 240

Gln Val Phe Gly Pro Arg Thr Lys Gly Lys Glu Gly Asn Phe Gly Asp
245 250 255

Asp Lys Met Asn Glu Glu Gly Ile Lys Asp Gly Arg Val Thr Ala Met
260 265 270

Leu Asn Leu Val Pro Ser Ser His Ala Cys Leu Phe Gly Ser Arg Val
275 280 285

Thr Pro Lys Leu Gln Leu Asp Gly Leu His Leu Arg Phe Glu Phe Thr
290 295 300

Thr Val Val Pro Cys Asp Asp Pro Gln Phe Asp Asn Tyr Val Lys Ile
305 310 315 320

Cys Asp Gln Cys Val Asp Gly Val Gly Thr Arg Pro Lys Asp Asp Glu
325 330 335

Pro Lys Pro Lys Ser Arg Ser Ser Ser Arg Pro Ala Thr Arg Gly Asn

340 345 350

Ser Pro Ala Pro Arg Gln Gln Arg Pro Lys Lys Glu Lys Lys Leu Lys
355 360 365

Lys Gln Asp Asp Glu Ala Asp Lys Ala Leu Thr Ser Asp Glu Glu Arg
370 375 380

Asn Asn Ala Gln Leu Glu Phe Tyr Asp Glu Pro Lys Val Ile Asn Trp
385 390 395 400

Gly Asp Ala Ala Leu Gly Glu Asn Glu Leu
405 410

<210> 199
<211> 30
<212> PRT
<213> conotoxin

<400> 199

Cys Ile Ala Val Gly Gln Leu Cys Val Phe Trp Asn Ile Gly Arg Pro
1 5 10 15

Cys Cys Ser Gly Leu Cys Val Phe Ala Cys Thr Val Lys Leu
20 25 30

<210> 200
<211> 31
<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 200

Cys Ile Ser Leu Cys Ser Cys Ile Cys Thr Val Val Gln Arg Cys Ala
1 5 10 15

Ser Asn Lys Pro His Val Leu Glu Asp Pro Cys Lys Val Gln His
20 25 30

<210> 201
<211> 310
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 201
cgatgtttca tcttgttgac ttccaggtta caatagcaga gatattgatt atcattatga 60

ggactttcag gattgctatt tggaatcttg acgttataat aagttcaata gtgagacaat 120

tatttaagcc tctaactaag aagaattatt cggagttaga tgatgaagaa cctatggagt 180

tagattatcc ataaaacgaa catgaaaatt attctcttcc tgacattgat tgtatttaca 240

tcttgcgagc tatatcacta tcaggagtgt gttagaggta cgactgtact actaaaagaa 300

ccttgcccat 310

<210> 202
<211> 556
<212> DNA
<213> Severe acute respiratory syndrome virus

<400> 202
agaaagacag aatgaatgag ctcactttaa ttgacttcta tttgtgcttt ttagcctttc 60

tgctattcct tgttttaata atgcttatta tattttggtt ttcactcgaa atccaggatc 120

tagaagaacc ttgtaccaaa gtctaaacga acatgaaact tctcattgtt ttgacttgta 180

tttctctatg cagttgcata tgcactgtag tacagcgctg tgcatctaat aaacctcatg 240

tgcttgaaga tccttgtaag gtacaacact aggggtaata cttatagcac tgcttggctt 300

tgtgctctag gaaaggtttt acctttttcat agatggcaca ctatggttca aacatgcaca 360

cctaatgtta ctatcaactg tcaagatcca gctggtggtg cgcttatagc taggtgttgg 420

taccttcatg aaggtcacca aactgctgca tttagagacg tacttgttgt tttaaataaa 480

cgaacaaatt aaaatgtctg ataatggacc ccaatcaaac caacgtagtg ccccccgcat 540

tacatttggt ggaccc 556

<210> 203
<211> 1255
<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 203

Met Phe Ile Phe Leu Leu Phe Leu Thr Leu Thr Ser Gly Ser Asp Leu
1 5 10 15

Asp Arg Cys Thr Thr Phe Asp Asp Val Gln Ala Pro Asn Tyr Thr Gln
20 25 30

His Thr Ser Ser Met Arg Gly Val Tyr Tyr Pro Asp Glu Ile Phe Arg
35 40 45

Ser Asp Thr Leu Tyr Leu Thr Gln Asp Leu Phe Leu Pro Phe Tyr Ser
50 55 60

Asn Val Thr Gly Phe His Thr Ile Asn His Thr Phe Gly Asn Pro Val
65 70 75 80

Ile Pro Phe Lys Asp Gly Ile Tyr Phe Ala Ala Thr Glu Lys Ser Asn
85 90 95

Val Val Arg Gly Trp Val Phe Gly Ser Thr Met Asn Asn Lys Ser Gln
100 105 110

Ser Val Ile Ile Ile Asn Asn Ser Thr Asn Val Val Ile Arg Ala Cys
115 120 125

Asn Phe Glu Leu Cys Asp Asn Pro Phe Phe Ala Val Ser Lys Pro Met
130 135 140

Gly Thr Gln Thr His Thr Met Ile Phe Asp Asn Ala Phe Asn Cys Thr
145 150 155 160

Phe Glu Tyr Ile Ser Asp Ala Phe Ser Leu Asp Val Ser Glu Lys Ser
165 170 175

Gly Asn Phe Lys His Leu Arg Glu Phe Val Phe Lys Asn Lys Asp Gly
180 185 190

Phe Leu Tyr Val Tyr Lys Gly Tyr Gln Pro Ile Asp Val Val Arg Asp
195 200 205

Leu Pro Ser Gly Phe Asn Thr Leu Lys Pro Ile Phe Lys Leu Pro Leu
210 215 220

Gly Ile Asn Ile Thr Asn Phe Arg Ala Ile Leu Thr Ala Phe Ser Pro
225 230 235 240

Ala Gln Asp Ile Trp Gly Thr Ser Ala Ala Ala Tyr Phe Val Gly Tyr
245 250 255

Leu Lys Pro Thr Thr Phe Met Leu Lys Tyr Asp Glu Asn Gly Thr Ile
260 265 270

Thr Asp Ala Val Asp Cys Ser Gln Asn Pro Leu Ala Glu Leu Lys Cys
275 280 285

Ser Val Lys Ser Phe Glu Ile Asp Lys Gly Ile Tyr Gln Thr Ser Asn
290 295 300

Phe Arg Val Val Pro Ser Gly Asp Val Val Arg Phe Pro Asn Ile Thr
305 310 315 320

Asn Leu Cys Pro Phe Gly Glu Val Phe Asn Ala Thr Lys Phe Pro Ser

325 330 335

Val Tyr Ala Trp Glu Arg Lys Lys Ile Ser Asn Cys Val Ala Asp Tyr
340 345 350

Ser Val Leu Tyr Asn Ser Thr Phe Phe Ser Thr Phe Lys Cys Tyr Gly
355 360 365

Val Ser Ala Thr Lys Leu Asn Asp Leu Cys Phe Ser Asn Val Tyr Ala
370 375 380

Asp Ser Phe Val Val Lys Gly Asp Asp Val Arg Gln Ile Ala Pro Gly
385 390 395 400

Gln Thr Gly Val Ile Ala Asp Tyr Asn Tyr Lys Leu Pro Asp Asp Phe
405 410 415

Met Gly Cys Val Leu Ala Trp Asn Thr Arg Asn Ile Asp Ala Thr Ser
420 425 430

Thr Gly Asn Tyr Asn Tyr Lys Tyr Arg Tyr Leu Arg His Gly Lys Leu
435 440 445

Arg Pro Phe Glu Arg Asp Ile Ser Asn Val Pro Phe Ser Pro Asp Gly
450 455 460

Lys Pro Cys Thr Pro Pro Ala Leu Asn Cys Tyr Trp Pro Leu Asn Asp
465 470 475 480

Tyr Gly Phe Tyr Thr Thr Thr Gly Ile Gly Tyr Gln Pro Tyr Arg Val
485 490 495

Val Val Leu Ser Phe Glu Leu Leu Asn Ala Pro Ala Thr Val Cys Gly
500 505 510

Pro Lys Leu Ser Thr Asp Leu Ile Lys Asn Gln Cys Val Asn Phe Asn
515 520 525

Phe Asn Gly Leu Thr Gly Thr Gly Val Leu Thr Pro Ser Ser Lys Arg
530 535 540

Phe Gln Pro Phe Gln Gln Phe Gly Arg Asp Val Ser Asp Phe Thr Asp
545 550 555 560

Ser Val Arg Asp Pro Lys Thr Ser Glu Ile Leu Asp Ile Ser Pro Cys
565 570 575

Ala Phe Gly Gly Val Ser Val Ile Thr Pro Gly Thr Asn Ala Ser Ser
580 585 590

Glu Val Ala Val Leu Tyr Gln Asp Val Asn Cys Thr Asp Val Ser Thr
595 600 605

Ala Ile His Ala Asp Gln Leu Thr Pro Ala Trp Arg Ile Tyr Ser Thr
610 615 620

Gly Asn Asn Val Phe Gln Thr Gln Ala Gly Cys Leu Ile Gly Ala Glu
625 630 635 640

His Val Asp Thr Ser Tyr Glu Cys Asp Ile Pro Ile Gly Ala Gly Ile
645 650 655

Cys Ala Ser Tyr His Thr Val Ser Leu Leu Arg Ser Thr Ser Gln Lys
660 665 670

Ser Ile Val Ala Tyr Thr Met Ser Leu Gly Ala Asp Ser Ser Ile Ala
675 680 685

Tyr Ser Asn Asn Thr Ile Ala Ile Pro Thr Asn Phe Ser Ile Ser Ile
690 695 700

Thr Thr Glu Val Met Pro Val Ser Met Ala Lys Thr Ser Val Asp Cys
705 710 715 720

Asn Met Tyr Ile Cys Gly Asp Ser Thr Glu Cys Ala Asn Leu Leu Leu
725 730 735

Gln Tyr Gly Ser Phe Cys Thr Gln Leu Asn Arg Ala Leu Ser Gly Ile
740 745 750

Ala Ala Glu Gln Asp Arg Asn Thr Arg Glu Val Phe Ala Gln Val Lys
755 760 765

Gln Met Tyr Lys Thr Pro Thr Leu Lys Tyr Phe Gly Gly Phe Asn Phe
770 775 780

Ser Gln Ile Leu Pro Asp Pro Leu Lys Pro Thr Lys Arg Ser Phe Ile
785 790 795 800

Glu Asp Leu Leu Phe Asn Lys Val Thr Leu Ala Asp Ala Gly Phe Met
805 810 815

Lys Gln Tyr Gly Glu Cys Leu Gly Asp Ile Asn Ala Arg Asp Leu Ile
820 825 830

Cys Ala Gln Lys Phe Asn Gly Leu Thr Val Leu Pro Pro Leu Leu Thr
835 840 845

Asp Asp Met Ile Ala Ala Tyr Thr Ala Ala Leu Val Ser Gly Thr Ala
850 855 860

Thr Ala Gly Trp Thr Phe Gly Ala Gly Ala Ala Leu Gln Ile Pro Phe
865 870 875 880

Ala Met Gln Met Ala Tyr Arg Phe Asn Gly Ile Gly Val Thr Gln Asn
885 890 895

Val Leu Tyr Glu Asn Gln Lys Gln Ile Ala Asn Gln Phe Asn Lys Ala
900 905 910

Ile Ser Gln Ile Gln Glu Ser Leu Thr Thr Thr Ser Thr Ala Leu Gly
915 920 925

Lys Leu Gln Asp Val Val Asn Gln Asn Ala Gln Ala Leu Asn Thr Leu
930 935 940

Val Lys Gln Leu Ser Ser Asn Phe Gly Ala Ile Ser Ser Val Leu Asn
945 950 955 960

Asp Ile Leu Ser Arg Leu Asp Lys Val Glu Ala Glu Val Gln Ile Asp
965 970 975

Arg Leu Ile Thr Gly Arg Leu Gln Ser Leu Gln Thr Tyr Val Thr Gln
980 985 990

Gln Leu Ile Arg Ala Ala Glu Ile Arg Ala Ser Ala Asn Leu Ala Ala
995 1000 1005

Thr Lys Met Ser Glu Cys Val Leu Gly Gln Ser Lys Arg Val Asp
1010 1015 1020

Phe Cys Gly Lys Gly Tyr His Leu Met Ser Phe Pro Gln Ala Ala
1025 1030 1035

Pro His Gly Val Val Phe Leu His Val Thr Tyr Val Pro Ser Gln
1040 1045 1050

Glu Arg Asn Phe Thr Thr Ala Pro Ala Ile Cys His Glu Gly Lys
1055 1060 1065

Ala Tyr Phe Pro Arg Glu Gly Val Phe Val Phe Asn Gly Thr Ser
1070 1075 1080

Trp Phe Ile Thr Gln Arg Asn Phe Phe Ser Pro Gln Ile Ile Thr
1085 1090 1095

Thr Asp Asn Thr Phe Val Ser Gly Asn Cys Asp Val Val Ile Gly
1100 1105 1110

Ile Ile Asn Asn Thr Val Tyr Asp Pro Leu Gln Pro Glu Leu Asp
1115 1120 1125

Ser Phe Lys Glu Glu Leu Asp Lys Tyr Phe Lys Asn His Thr Ser
1130 1135 1140

Pro Asp Val Asp Leu Gly Asp Ile Ser Gly Ile Asn Ala Ser Val
1145 1150 1155

Val Asn Ile Gln Lys Glu Ile Asp Arg Leu Asn Glu Val Ala Lys
1160 1165 1170

Asn Leu Asn Glu Ser Leu Ile Asp Leu Gln Glu Leu Gly Lys Tyr
1175 1180 1185

Glu Gln Tyr Ile Lys Trp Pro Trp Tyr Val Trp Leu Gly Phe Ile
1190 1195 1200

Ala Gly Leu Ile Ala Ile Val Met Val Thr Ile Leu Leu Cys Cys
1205 1210 1215

Met Thr Ser Cys Cys Ser Cys Leu Lys Gly Ala Cys Ser Cys Gly
1220 1225 1230

Ser Cys Cys Lys Phe Asp Glu Asp Asp Ser Glu Pro Val Leu Lys
1235 1240 1245

Gly Val Lys Leu His Tyr Thr
1250 1255

<210> 204
<211> 422
<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 204

Met Ser Asp Asn Gly Pro Gln Ser Asn Gln Arg Ser Ala Pro Arg Ile
1 5 10 15

Thr Phe Gly Gly Pro Thr Asp Ser Thr Asp Asn Asn Gln Asn Gly Gly
20 25 30

Arg Asn Gly Ala Arg Pro Lys Gln Arg Arg Pro Gln Gly Leu Pro Asn
35 40 45

Asn Thr Ala Ser Trp Phe Thr Ala Leu Thr Gln His Gly Lys Glu Glu
50 55 60

Leu Arg Phe Pro Arg Gly Gln Gly Val Pro Ile Asn Thr Asn Ser Gly
65 70 75 80

Pro Asp Asp Gln Ile Gly Tyr Tyr Arg Arg Ala Thr Arg Arg Val Arg
85 90 95

Gly Gly Asp Gly Lys Met Lys Glu Leu Ser Pro Arg Trp Tyr Phe Tyr
100 105 110

Tyr Leu Gly Thr Gly Pro Glu Ala Ser Leu Pro Tyr Gly Ala Asn Lys
115 120 125

Glu Gly Ile Val Trp Val Ala Thr Glu Gly Ala Leu Asn Thr Pro Lys
130 135 140

Asp His Ile Gly Thr Arg Asn Pro Asn Asn Asn Ala Ala Thr Val Leu
145 150 155 160

Gln Leu Pro Gln Gly Thr Thr Leu Pro Lys Gly Phe Tyr Ala Glu Gly
165 170 175

Ser Arg Gly Gly Ser Gln Ala Ser Ser Arg Ser Ser Ser Arg Ser Arg
180 185 190

Gly Asn Ser Arg Asn Ser Thr Pro Gly Ser Ser Arg Gly Asn Ser Pro
195 200 205

Ala Arg Met Ala Ser Gly Gly Gly Glu Thr Ala Leu Ala Leu Leu Leu
210 215 220

Leu Asp Arg Leu Asn Gln Leu Glu Ser Lys Val Ser Gly Lys Gly Gln
225 230 235 240

Gln Gln Gln Gly Gln Thr Val Thr Lys Lys Ser Ala Ala Glu Ala Ser
245 250 255

Lys Lys Pro Arg Gln Lys Arg Thr Ala Thr Lys Gln Tyr Asn Val Thr
260 265 270

Gln Ala Phe Gly Arg Arg Gly Pro Glu Gln Thr Gln Gly Asn Phe Gly
275 280 285

Asp Gln Asp Leu Ile Arg Gln Gly Thr Asp Tyr Lys His Trp Pro Gln
290 295 300

Ile Ala Gln Phe Ala Pro Ser Ala Ser Ala Phe Phe Gly Met Ser Arg
305 310 315 320

Ile Gly Met Glu Val Thr Pro Ser Gly Thr Trp Leu Thr Tyr His Gly
325 330 335

Ala Ile Lys Leu Asp Asp Lys Asp Pro Gln Phe Lys Asp Asn Val Ile
340 345 350

Leu Leu Asn Lys His Ile Asp Ala Tyr Lys Thr Phe Pro Pro Thr Glu
355 360 365

Pro Lys Lys Asp Lys Lys Lys Lys Thr Asp Glu Ala Gln Pro Leu Pro
370 375 380

Gln Arg Gln Lys Lys Gln Pro Thr Val Thr Leu Leu Pro Ala Ala Asp
385 390 395 400

Met Asp Asp Phe Ser Arg Gln Leu Gln Asn Ser Met Ser Gly Ala Ser
405 410 415

Ala Asp Ser Thr Gln Ala
420

<210> 205
<211> 221
<212> PRT
<213> Sars associated coronavirus

<400> 205

Met Ala Asp Asn Gly Thr Ile Thr Val Glu Glu Leu Lys Gln Leu Leu
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Glu Gln Trp Asn Leu Val Ile Gly Phe Leu Phe Leu Ala Trp Ile Met

20 25 30

Leu Leu Gln Phe Ala Tyr Ser Asn Arg Asn Arg Phe Leu Tyr Ile Ile
35 40 45

Lys Leu Val Phe Leu Trp Leu Leu Trp Pro Val Thr Leu Ala Cys Phe
50 55 60

Val Leu Ala Ala Val Tyr Arg Ile Asn Trp Val Thr Gly Gly Ile Ala
65 70 75 80

Ile Ala Met Ala Cys Ile Val Gly Leu Met Trp Leu Ser Tyr Phe Val
85 90 95

Ala Ser Phe Arg Leu Phe Ala Arg Thr Arg Ser Met Trp Ser Phe Asn
100 105 110

Pro Glu Thr Asn Ile Leu Leu Asn Val Pro Leu Arg Gly Thr Ile Val
115 120 125

Thr Arg Pro Leu Met Glu Ser Glu Leu Val Ile Gly Ala Val Ile Ile
130 135 140

Arg Gly His Leu Arg Met Ala Gly His Ser Leu Gly Arg Cys Asp Ile
145 150 155 160

Lys Asp Leu Pro Lys Glu Ile Thr Val Ala Thr Ser Arg Thr Leu Ser
165 170 175

Tyr Tyr Lys Leu Gly Ala Ser Gln Arg Val Gly Thr Asp Ser Gly Phe
180 185 190

Ala Ala Tyr Asn Arg Tyr Arg Ile Gly Asn Tyr Lys Leu Asn Thr Asp
195 200 205

His Ala Gly Ser Asn Asp Asn Ile Ala Leu Leu Val Gln
210 215 220

<210> 206
<211> 76
<212> PRT
<213> Severe acute respiratory syndrome virus

<400> 206

Met Tyr Ser Phe Val Ser Glu Glu Thr Gly Thr Leu Ile Val Asn Ser
1 5 10 15

Val Leu Leu Phe Leu Ala Phe Val Val Phe Leu Leu Val Thr Leu Ala
20 25 30

Ile Leu Thr Ala Leu Arg Leu Cys Ala Tyr Cys Cys Asn Ile Val Asn
35 40 45

Val Ser Leu Val Lys Pro Thr Val Tyr Val Tyr Ser Arg Val Lys Asn
50 55 60

Leu Asn Ser Ser Glu Gly Val Pro Asp Leu Leu Val
65 70 75